

NAVAL AVIATION

NEWS



High Speed Flight
Reserve Publicity
Sky Sentries — Index

December 1946

R E S T R I C T E D



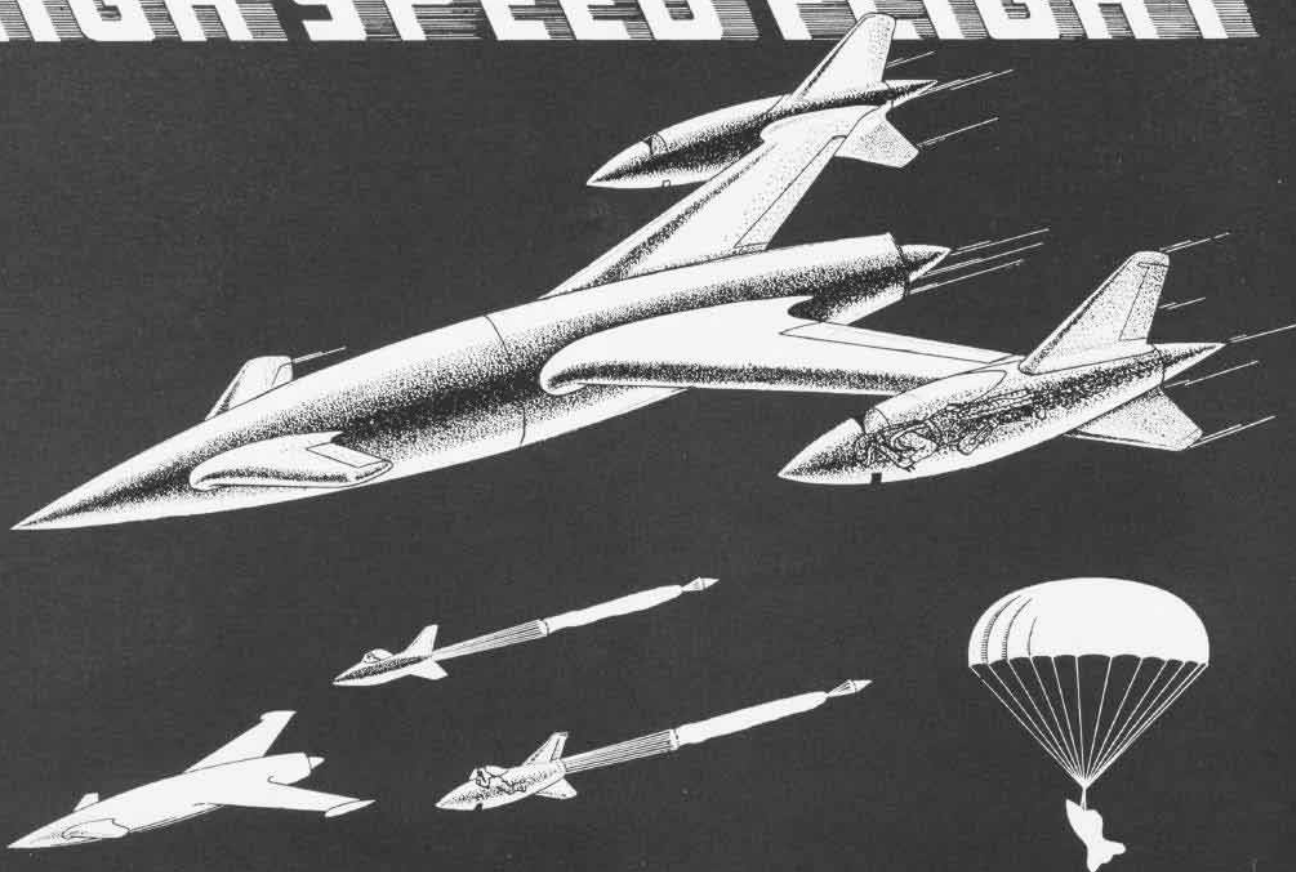


EVER VISIT THESE AIR STATIONS?

You've had recognition quizzes on planes and ships, now try to identify these stations—one east, one west coast. (Ans. Pg. 40)



HIGH SPEED FLIGHT



Pressurized Capsule, Blown From Plane, May Save Naval Aviators of the Future

CURRENT enthusiasm of aeronautical engineers and aviation scientists has been running away with talk of supersonic, ionospheric flight. Tales of tremendous speeds and altitudes to be conquered through high-speed, jet- and rocket-type aircraft have been printed and discussed in many scientific periodicals.

Yet underlying all the talk and all the enthusiasm for great speeds and high altitudes are such problems as "How can a man get out of his plane alive?" and "How much can he take in the way of G's?"

While the aircraft design branches of Bureau of Aeronautics are busy trying to solve the problems of high speed flight into the supersonic range, other sections like BuAer's Airborne Equipment, and the Naval Aircraft Factory and Naval Air Experimental Station in Philadelphia are studying how to get the pilot out of such a plane alive. Bureau of Medicine and Surgery is doing research into the problem of how many G's he will be able to stand when the time comes for him to be ejected from his jet plane.

Progress in the latter phases of high speed flight probably is slower than that of engineers who are building planes that will go better than 600 mph. After repeated dummy tests on the ground and in speeding planes in flight, the Navy on 30 October for the first time ejected one of its men safely from a JD-1 flying 250 mph. at 5,000 feet over NAS LAKEHURST. (See photos, page 5.) Further tests are set.

At the Naval Aircraft Material Center's unit at Johnsville, a human centrifuge is being constructed to augment studies made on the centrifuge at NAS PENSACOLA. In this circular building, illustrated on page 6, a man is placed in a cockpit, whirled around a circle until he approaches unconsciousness. Scientific instruments record how much G pressure he is receiving and movies or television report how he looks.

A third phase of the problems of high speed flight was investigated recently at Pensacola where volunteers spent 35 days in the gradually-rarefied atmosphere of a low-pressure oxygen chamber. Much valuable data on how the human body reacts to lack of oxygen were secured before it reached 29,000 feet and had to descend. It was found man could become acclimatized to such rarefied air, whereas he would begin to act strangely under ordinary conditions above 10,000 feet.

Drawings shown on this page and those following are idealized conceptions of how the aviator of the future may be able to ride his 1,000-mile-an-hour rocket plane and get out of it alive. They represent a three-phase program which is under actual study by BuAer and NAMC. The project calls for the Experiment station in Philadelphia to work out ways of ejecting the pilot from his plane in his seat. The Naval Aircraft Factory was assigned the task of designing a way to blow him out of the plane in an enclosed cockpit and third, to eject him in a pressurized capsule in which he could fall to safe altitudes before getting out and coming the rest of the way down by his own parachute. The next step will be to give the pilot the knowledge of how to use the new devices which are developed to keep him alive and well.

Navy Emphasizes Safety of Its Pilots in Future High Speed Jet or Rocket Plane

UNLESS the Navy wanted its pilots of the future to all be one-flight Kamikazes, which is ridiculous, it had to develop ways of getting them out of high speed planes. During the past war few men were able to bail out of a high speed dive and live because the wind blast blew them against the rudder or horizontal stabilizers.

As the speed of aircraft is stepped up to the 600 mph. range, to bail out would be impossible. The pilot will have to be saved by mechanical means. That is why the Navy assigned NAMC the job of figuring out a pilot ejection system that will work. That is why NAMC sent Lt. (jg) A. J. Furtek aloft over Lakehurst's blimp landing circle in a J-1 on October 30 and blew him and his cockpit seat out of the plane with two powder charges. To miss the plane's high rudder, the Martin-Baker seat (an English design) was tossed out with two 600-grain charges at 5,000 feet. The plane was going 250 mph.

Because a fastener on the 28-foot chute attached to his seat fouled, Furtek fell 23 seconds to 1,500 feet, then got out of the seat, pulled the rip cord of his own chute and came to earth safely.

Previously, numerous tests had been made on the ground at Philadelphia firing the seat from the J-1 into a net. Then the plane went up into the air and the seat was ejected at speeds of 200-250-300 and 350 mph. with a 200-lb. dummy, to see if it was safe for a man to ride it down and safe for the airplane. Powder charges are ignited when the man pulls a canvas curtain down over his face to protect him from the air blast. A 40-inch piston in the rear of the seat is the "gun" which fires him out.

The Navy has secured a twin-fuselaged P-82 Mustang from the Army for further pilot-ejection tests at higher speeds than are obtainable with the J-1. These will be made within the next two months. Models of the XF2D-1 are being made for wind tunnel tests of problems which will arise when the Navy tries to eject the whole cockpit from a plane or a capsule with the pilot in it. This is being done at NAF Philadelphia.

There are other problems in high speed flights which also must be met—implementing oxygen equipment so that it will sustain men at 50,000 feet, correcting blood boiling at body temperature at 60,000 feet, lowering the excessive temperature created by ram effect and skin friction on supersonic aircraft at ionospheric levels, fluctuation of cockpit temperature with altitude increases. It goes from warm to cold to frigid to hot to torrid to boiling.

Navy scientists were interested in the pilot ejection system incorporated in the German Mather interceptor (The Viper) which was so effective against high-flying Allied bombers in closing months of the war. The Mather job was




fired straight up with rocket propulsion to the bombers' altitude. The pilot opened up on them with his 26 nose rockets. As the tiny plane came down he was ejected from the cockpit and parachuted down.

A pilot who bails out at 50,000 feet or better faces a number of difficulties. *First*, he will lack adequate oxygen if he depends on existing oxygen equipment. *Second*, the radical drop in temperature from the warmth of a cockpit probably would kill him before he could drop to a safe level.

Third, a plane, to stay aloft in such thin air, must travel at a high rate of speed. Thus the sudden blast of wind on the airman would probably kill him. He would hit the tail fin unless he was ejected high out of his cockpit. From these factors it appears the answer may be in an air-tight enclosure in which he can escape the plane and later emerge from and parachute the rest of the way to the ground.

It is evident that a lot of emphasis must be put on improvement of parachutes in the seat-ejection program.

HOW MANY G'S CAN A PILOT TAKE?

	5½ G's Acceleration lasting 3 to 4 seconds
	14 G's Up to 3 minutes
	11 G's Up to 3 minutes

Existing chutes could not stand the strain of opening at terrific speeds. When a parachute does, there must be an accompanying development to keep the pilot from decelerating too fast as a result of the sudden jerk as the chute opens.

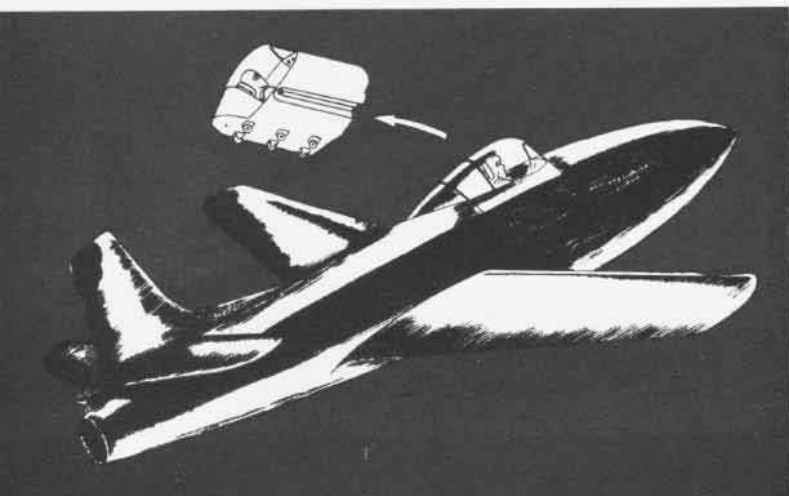
A ribbon-type chute such as tried by the Germans has possibilities in some ways. It was tested at NAS JACKSONVILLE (NANews April, 1946). For deceleration, the chute may be reefed out until the capsule has slowed down to normal falling speeds and then allowed to flower out full.

As shown in accompanying drawings, the parachute hatch portion of the capsule may prove an added benefit. When the hatch door opens, the air rushing past could lock it in an open position and transform it into an anti-spin protrusion. Such anti-spin aids are necessary if the pilot is to be able to bail out of the falling cube, or centrifugal force, like in a tight spin, might hold him inside.

Preliminary steps to the pilot ejection program are being studied at Philadelphia on the 105-foot steel tower used to test seats and charges—as well as men. The tower fires a man in a specially-designed seat up its inclined length. Measurements are made with each test to determine the charge and height necessary for a man to clear the empenage of a plane going at high speed and not exceed top G's.

◆ Ejectable cockpit capsule may have roller casters

Restricted



EARLIER this year the Army ejected a man from a P-61 at Dayton, Ohio. The Army uses a single powder charge while the Navy believes two charges will prevent too-high accelerations. The necessity for the delay was the problem of acceleration and latitudinal (head-to-foot) G strain. By using two charges, the Navy is able to cut the G's down by five. The problem of G strain is a great one and one which requires more experimentation before it can be discounted. Tests have indicated that a maximum of

Explosive rivets might free center section of plane

20 G for one-tenth of a second is about the safe limit of human endurance.

A propulsion charge adequate to clear the tail of an average airplane puts about 10 G on the individual, the variation dependent on the length of the firing cylinder and the number of "booster" charges used.

Latitudinal G strain is not the only G to worry about. Tumbling following the initial ejection will put tangential (chest-to-back) G strain on in great force. The scientists hope to prevent this by having the seat chute reefed out almost immediately. Doing so prevents G from developing when the body is suddenly decelerated with the jerk of the chute as it opens. Lt. (jg) Furtek reported no uncomfortable sensations when the powder charge went off but said he received a wrench in his back from a quarter-turn lateral twist when the drogue chute opened.

Another pilot safety item which is being developed by the Navy is the deceleration vest. This item has proved

Forward part of fuselage might be blown off plane

successful to the extent that a pilot, using such a vest, probably could walk away from a 100-mph. crash. Numerous TBM's have been catapulted into a sandbag barrier at NAAS MUSTIN FIELD, Philadelphia, to test these vests. Dummies in the cockpit wear the nylon vests whose stretching qualities cut many G's off the stunning impact of a crash. (See photo, pg. 7.)

Another phase of the campaign to solve problems of high speed flight is the study made in the human centrifuges. The Navy is building the world's largest in Johnsville, Pa. It will test not only man's physiological limitations, but aid in developing devices and means of extending those limits so men can fly the fast planes now being built.

Rub out the question of speed alone. Man is built to travel just as fast as an enclosed plane can carry him. Acceleration at high speeds is a horse of a different color.

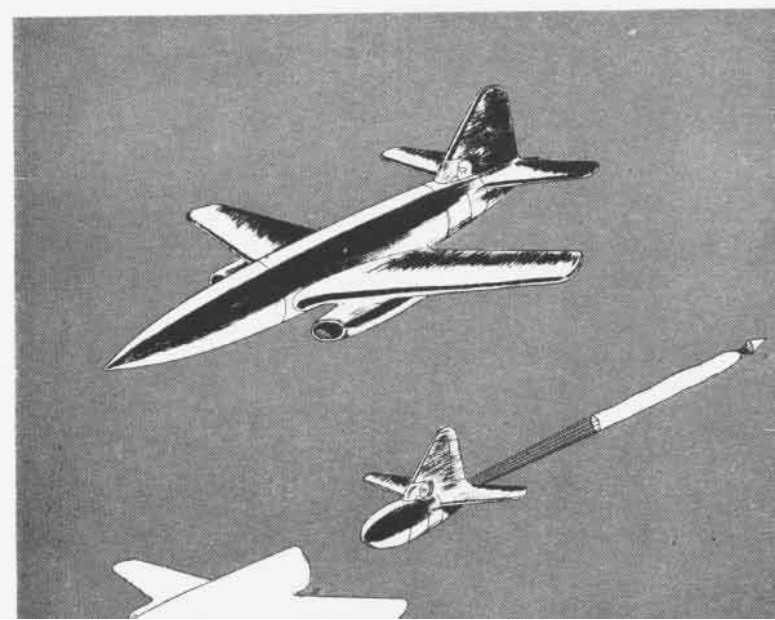
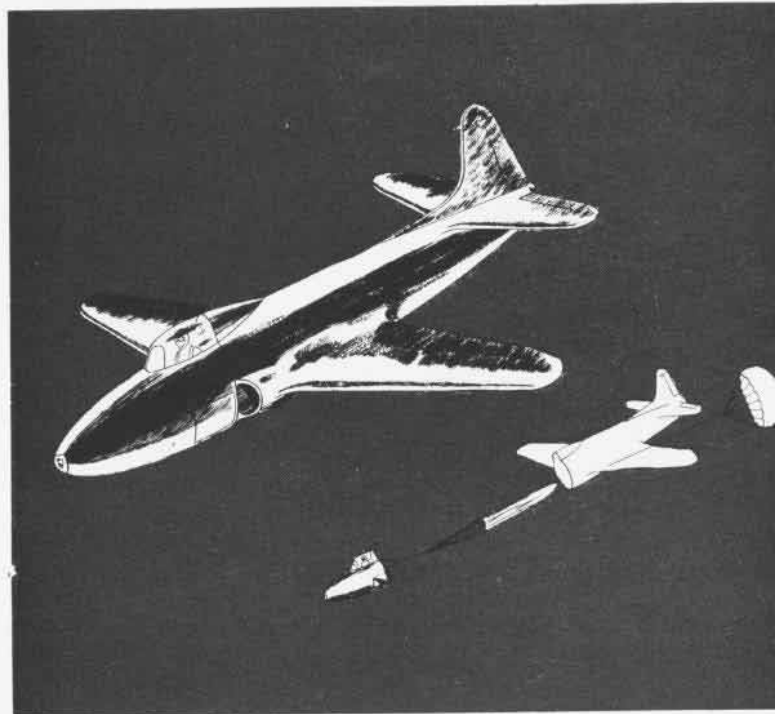
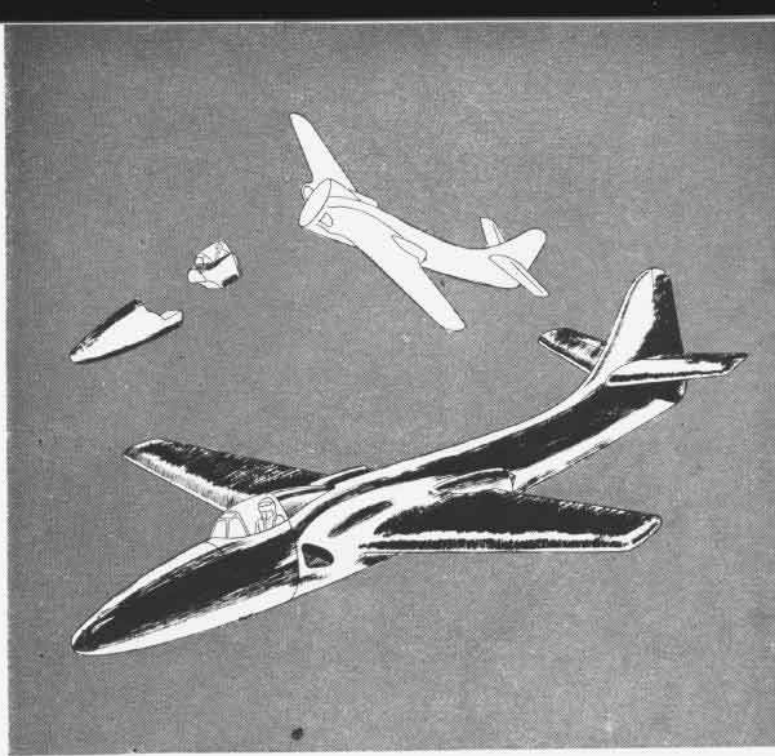
One G is the strain imposed on a human being under normal conditions. The maximum strain a man can stand over an extended period is just under nine G. The average pilot will black out around five G. However, he can stand more than 10 G for short periods—i.e., .1 to .5 seconds. The tower at Philadelphia has given men a chance to absorb 20 G without bad effects.

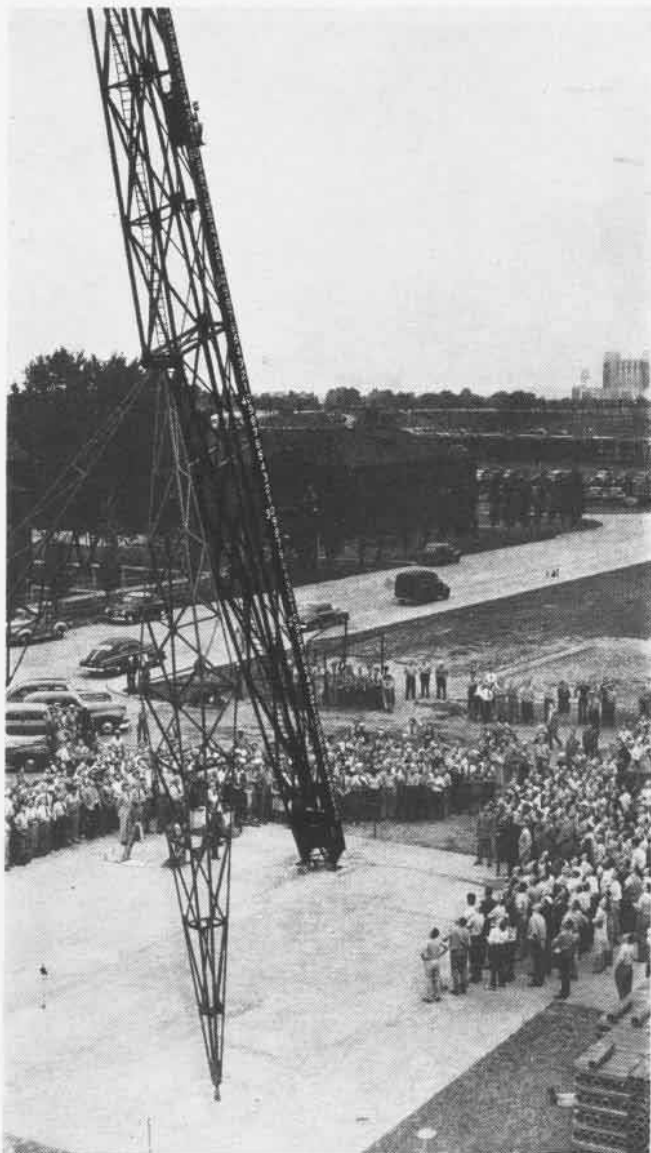
In flying, two things enter into determining the G intensity. One of them is the speed of the plane, the other

After end of plane, with pilot, could form capsule

the rapidity of change of direction. To explain, a tight turn at comparatively slow speed will provoke equal G as a gradual turn at high speed.

The normal pressure around a man's eyes is 20 millimeters. Such pressure keeps his eyes in place, is maintained by the flow of blood through the head. When the normal amount of blood is diminished or increased the eyes no longer are capable of good vision, are no longer in place.





TEST TOWER AT NAMC, PHILADELPHIA. BLOWS MAN 73 FEET UP

MAN PULLS CANVAS CURTAIN, FIRING SEAT'S POWDER CHARGE



Human Centrifuge Tests How a Navy Pilot Will React at High Speeds or Many G's

Poor vision mounts with the increase of G's. What starts out first as a hazy appearance of things soon becomes total darkness. However, when the subject can see no more he may still be conscious—at least for a few seconds. The eyes generally are the first warning senses of G strain.

Failure of hearing is another symptom of G stress. Sounds become collected and not easily distinguishable. Just before blacking out, a man's hearing goes altogether.

Intertia and kinetic energy play havoc with the flow in the semi-circular canals of a man's head when he is moving at a fast pace in a specific direction and then suddenly heads off on another compass bearing. Disorientation or vertigo results. A man no longer is capable of judging his attitude of flight by sense or balance alone.

The amount of time before the pilot can trust himself after vertigo results is dependent on speed of the plane and radius of the maneuver just completed. Until the fluid in the canals begins to flow normally again, it may be seconds or a matter of minutes before a pilot can swear to the validity of his sense of balance.

A fourth and most common symptom of G strain is fatigue and discomfort. Studies on the acceleration centrifuge have had many objectives. The new one at Johnsville will be able to incorporate all in a single operation.

To do so the engineers installed on the huge gondola-like machine all the mechanisms needed to record the activity and response of each pertinent organ of the body. Primary recording units are electro-encephalograph for brain waves, heart-rate and ear-pulse (bio-assay) recorders, mirror and string galvanometers and amplifiers with special circuits to indicate subject's condition as a whole.

To understand what the centrifuge is and how it works, one must get the picture of a carnival "whip" ride, for that is the closest parallel to the acceleration machine.

As seen in the accompanying line drawing, the cab in which the subject sits is on the end of a steel frame shaft which is connected to a cam in the center of the circular room. As the ram rotates, the cab circles the room.

Radius of the centrifuge is 50 feet from the center of the rotating cam to the heart level of the subject. With this distance, acceleration can be developed up to 40 G for 60 seconds when equipment is being tested.

IN A NORMAL test the subject is seated in the cab and strapped in. When he signals his readiness, the cam begins to turn and the cab moves around the room, gaining speed as it does. When it reaches the specific RPM for a certain G to be exerted on a subject, the RPM is maintained while the subject is observed. If everything is all right the cam can be speeded up and greater G results.

The subject may exert extra G on himself within a certain RPM by pulling back on the control stick. Absolute control of the cab and the G strain to be imposed is at the control board of the central operator, however. This eliminates any possibility of the subject submitting himself to excessive G.

Tangential G (chest-to-back) on the subject will be limited as much as possible. This exists only until a constant RPM has been reached and is the result of intertia. Proper suspension of the subject in gimbals may reduce tangential G and allow the only force exerted on the subject to come from the floor of the cab.

No more than three negative G will be placed on the subject for longer than five seconds. An automatic hook-up will right the cab and slow its revolving when that occurs.

With an eye for studying effects of G at altitude, doctors and engineers have made plans to decompress and refrigerate the cab of the centrifuge.

Because the cab will be enclosed for refrigeration and decompression, it is necessary to maintain constant check by means other than those employed on other centrifuges. Always before, a central operator placed on the cam turned continuously on a much shorter radius and at a resultingly slower speed, to watch the subject.

In the new centrifuge, television will play the part of watchdog. An operator sitting in another part of the building can keep tab on the television screen, the transmitting set being in the cab facing the subject.

When the pilot is under excessive strain his face registers his distress and the image of his face can be seen on the television screen. The operator then will end the test.



EJECTION SEAT FIRES WHEN FURTEK PULLS CURTAIN OVER FACE

The cockpit cab will be well-equipped to provide a comfortable spot for the subject. The control stick will be that used in a P-38. On this stick will be buttons for the light and horn tests which tell how the pilot is "surviving."

Two lights flash on constantly in front of him. A horn blows constantly in his ear. As long as he can see, he is supposed to push a button and turn off the lights. Likewise, for the longevity of his hearing faculties and the horn.

When the pilot no longer can see or hear he is rapidly approaching the condition of complete blackout and is no longer capable of handling an aircraft. Thus it is that the doctors and scientists use the horn and light tests to aid in determining the G potential of any particular subject.

Movies have been taken of men riding in a centrifuge and show the progressive blackout as the gear speeds up. His normally-rounded face sags like an aged person, his eyes lose their luster and he takes on a deathly look that belies his actual feelings, which are not painful.

Patterning after the idea schemed up by Mayo Bros., Clinic which (along with U. S. C.) was one of the first private medical units to study aviation medicine and install centrifuges, the Navy has taken an SBD and made of it a "flying centrifuge." So equipped with many of the testing devices found in the larger acceleration set-up on the ground, the SBD is also fixed to afford safety precautions lest a pilot blackout by his own hand and injure himself and the plane.

The use of this plane gives doctors an opportunity to check their ground studies and supply information in making the centrifuge perform more realistically.

Doctors who studied acceleration in the early thirties

came up with a number of ideas in an effort to aid flyers in beating the G nemesis.

One of these was the G suit—or anti-blackout suit. This piece of flight gear, worn like a pair of coveralls, had inflatable abdominal and leg bladders which helped not only to keep blood from flowing so fast away from the head but also to prevent it from pooling in the lower sections of the body following that.

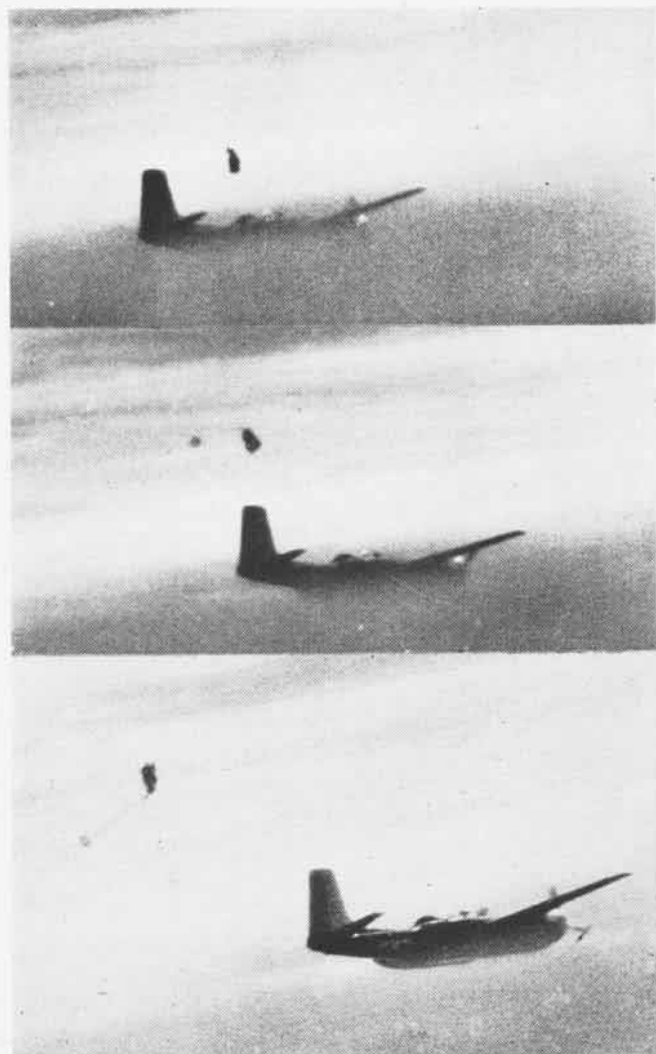
This suit is capable of increasing an individual's G limitations from 0.9 to 1.4 G. Self-aid in the form of screaming and straining has been found capable of increasing G limitations up as much as 2. Thus a pilot whose normal blackout point is 5 G may be able to withstand as many as 8 G if he makes use of the natural and artificial aids.

Medical units working with the centrifuge program have three specific ideas in mind in developing their work:

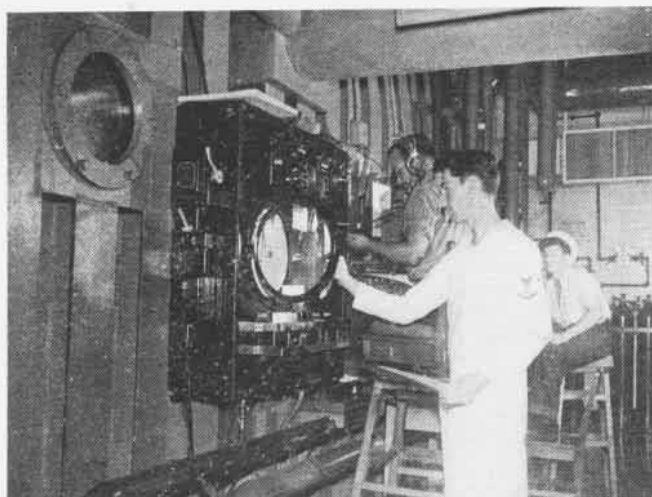
First, an indoctrination program primarily for flight surgeons and selected groups of jet and standard fighter pilots but also for aviators and cadets.

Second, studying with BUAER and Special Devices the desirability of prone or supine positions to promote G tolerance.

Third, to use the centrifuge as well as aircraft in determining, 1. variations of individual pilots in respect to G tolerance, 2. the degree of suit protection and 3. the need for and degree of compensatory straining required. Also, to determine who among the flight candidates will fly high speed aircraft and who will be instructors in basic trainers.



MOVIES SHOW FURTEK CLEARING TAIL OF JD-1 BY WIDE MARGIN



PHARMACIST'S MATE REPLACES GRAPH IN 'OPERATION EVEREST'

'Everest' Tests in High Altitude Chamber Show Men Get Used to Lack of Oxygen

ONE of the greatest medical research efforts to be completed is *Operation Everest* which reached its climax on August 1 of this year at Pensacola. On that date two Navy volunteers went to simulated heights never before reached by man without additional oxygen.

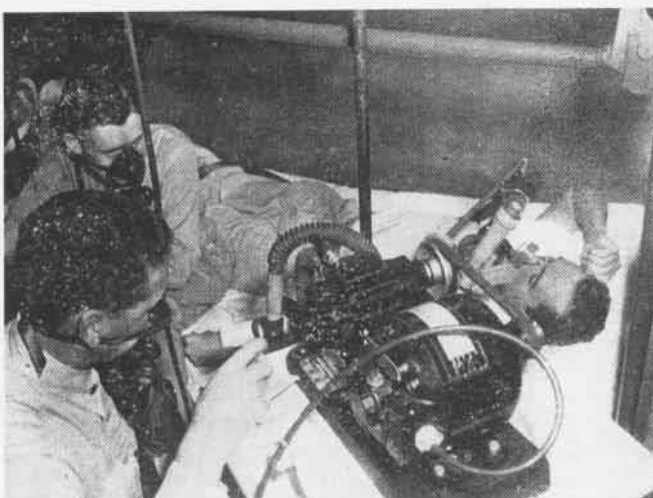
Operation Everest was so named because its objective was to study man's reactions to limited-oxygen air such as found at the peak of Mount Everest.

Four volunteers started as "guinea-pigs." On June 28 of this year they entered the pressure chamber and started their climb to the level of 29,035 feet—just 23 feet higher than Everest.

Two of them made it. The other two lasted till the altimeter showed just greater than 27,000 feet before they required additional oxygen. These men had spent 35 days acclimatizing themselves to the restricted oxygen by a gradual decrease in pressure in chamber.

On that last day, in an effort to hit the 29,000 mark before the emotional strain of the men proved too much, doctors and subjects alike had welcomed the dash to the desired altitude.

To appreciate the importance of this test, a person must understand the effects of lack of oxygen. Through periodic stages of physical experiment a person who is subjected to the thin atmosphere of actual or simulated altitudes will



'EVEREST' TECHNICIANS GIVE RESPIRATORY TEST TO McNUTT

find himself going from normality to giddiness to dizziness. From that point—or that altitude—on he will find himself going nowhere. He will recognize nothing. The doctor who watches him, however, will find him going unconscious and, finally, if not relieved with oxygen, dying.

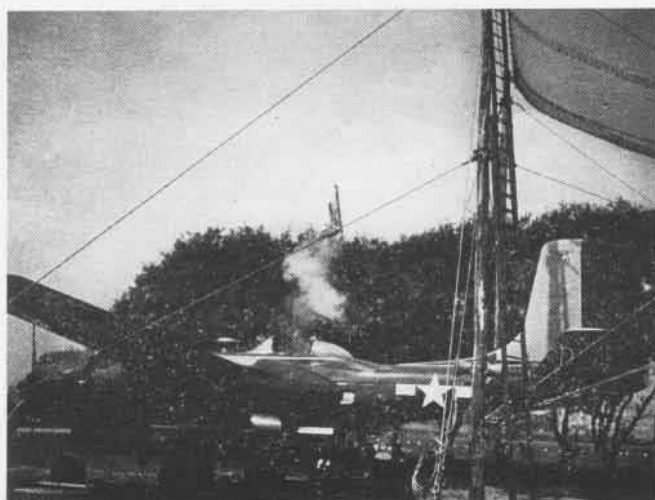
It takes but one sub-stratosphere flight at no more than 15,000 feet to impress an individual with the fact that physical and mental efficiency varies inversely with altitude. He just has to have oxygen—and plenty of it—to function properly, just like his plane engine.

Research of *Operation Everest* was centered around the reaction of certain organs of the body at specific altitudes . . . at rest and during exercise. Medium for the exercise was a stationary bicycle.

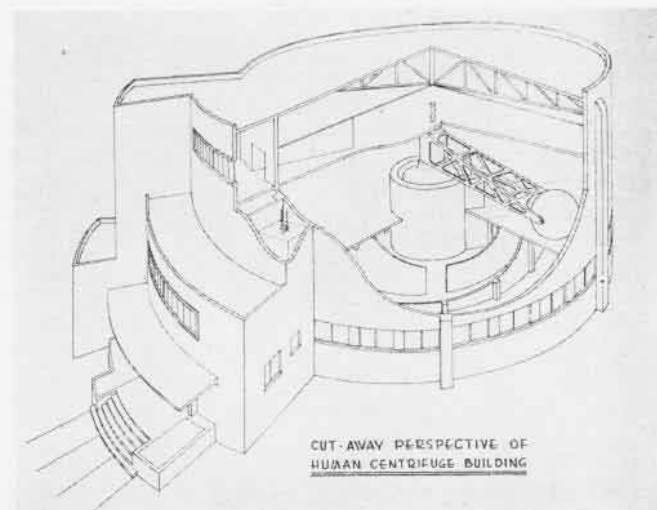
Special contrivances recorded the men's heartbeats while they slept, thus insuring no sudden physical drop without its being apparent to watchers.

Under normal conditions, a human being will pass out in three minutes when breathing air at 29,000 feet. Not so two of our volunteers. They remained conscious and mentally fit for more than 30 minutes before donning oxygen masks and continuing upward to 50,000 feet for a brief interlude.

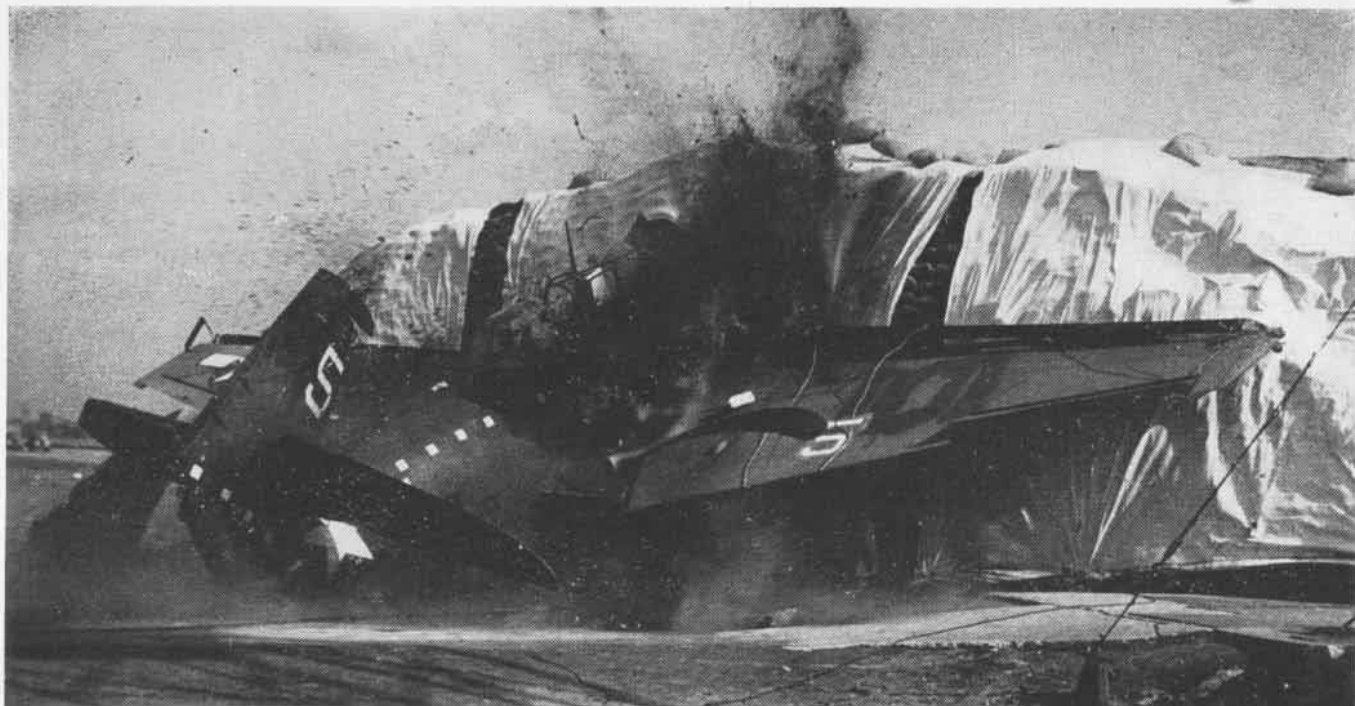
From this performance two basic conclusions were drawn. First, gradual acclimatization affords men the chance eventually to withstand forces they normally could not take. Secondly, different individuals respond to the acclimatization better than others, thus emphasizing more than ever before need for strict physical aptitude tests for the pilots



DUMMY SEAT SOARS OUT OF JD-1 IN A TEST AT PHILADELPHIA



JOHNSVILLE CENTRIFUGE WILL SIMULATE A 60,000-FOOT ALTITUDE



SURVEYED TBM RAMS SANDBAG BARRIER AT MUSTIN FIELD TO TEST NEW CRASH HARNESS; NOTE PROPELLER BLADE IN MIDAIR (CENTER)

N. A. M. C. SHOWS SCIENTIFIC PROGRESS

THE PART NAVAL AIR MATERIAL CENTER, Philadelphia, is playing in helping Naval Aviation solve the scientific problems of the present and future was demonstrated at Open Houses held there in October.

Hundreds of Army and Navy officers, newsmen, departmental officials and others saw displays of the newest in guided missiles, pilot ejection seats, crash harness, catapults and scores of other experimental programs going on at NAMC or its subsidiary activities.

Each of these put on displays of the work they are doing to keep the Navy in the forefront in aviation progress.

They included the Naval Aircraft Factory, Naval Air Experimental Station, Naval Aircraft Modification Unit, and NAAS MUSTIN field.

Visitors saw actual "shots" of men in the pilot ejection test tower (see *High Speed Flight*, pg. 4), saw TBM's catapulted full speed against a sandbag embankment to test new nylon crash harness on dummies. They were taken through the laboratories at NAMC and saw how tests are made of all new aircraft and their parts to see if they will stand up under combat conditions.

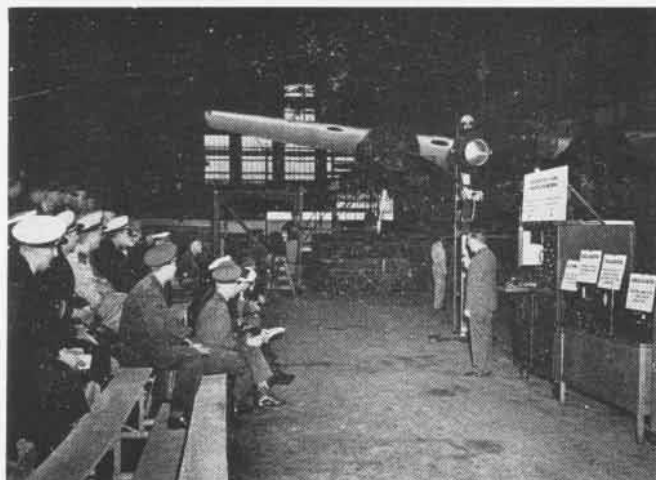
Thousands of instruments, devices

and improvements now used every day by Naval Aviation have been developed and tested at NAMC. Back in 1917 it started out as the Naval Aircraft Factory but in war years it jumped to 10,000 workers and a \$50,000,000 annual budget.

During the past 29 years, more than 30 different types of aircraft—training, observation, gliders and patrol bombers—have been manufactured at NAF.

NAMC's emphasis today is on experimental work. It has laid out a five-year expansion program which will make it a major research and development activity for all Naval Aviation.

DROP TEST ON F7F SHOWS HOW RUGGED PLANE CAN TAKE KNOCKS



ADMIRALS RADFORD, ROYCE, SALLADA AND MR. GATES SEE TEST



GRAMPAW PETTIBONE

Train Your Crew

The PB4Y-2 was on top of a light overcast and started a let down to the gunnery area when the #2 engine began to smoke badly. The patrol plane commander ordered the #2 engine cut and feathered. Upon completion of this operation, he experienced great difficulty in maintaining speed and altitude. Power settings were increased to maximum and flaps were lowered slightly, as the pilot turned towards the coast line some fifteen miles away to try to find a landing spot.

A few minutes later when a water landing appeared imminent, the plane captain discovered that the mixture control for the #3 engine was in idle cut-off. The error was immediately corrected and the plane proceeded to base and effected a good three engine landing. Investigation revealed that the plane captain had cut the #3 engine while the co-pilot was busy feathering the #2 engine. He was trying to be helpful.

Comment:

Manipulation of the engine controls of the PB4Y-2 aircraft is purely a function of the pilots. A well trained crew is ready for every emergency and each crew member knows what his duties are. It is the responsibility of the patrol plane commander to maintain this state of readiness through frequent emergency drills. Technical Order #8-46 places some limitations on engine feathering drills, but they may and should be practiced (above 6,000 feet) often enough to maintain proficiency.

Snap Pull-Out

On his first dive bombing flight in the SBW the pilot neglected to set the tabs for his dive from 10,000 feet. At a speed of 325 knots he was forced to hold the stick forward to maintain his angle of dive. At release altitude he relaxed pressure on the stick and the plane executed a snap pull out that popped rivets and wrinkled the wings, wheel wells, and bomb bay doors, necessitating a major overhaul.

Grampaw Pettibone says:

If you want to live to be a dive bomber pilot who can hit what he aims at, you had better read Technical Note #72-44 and trim your plane for easy flying at release altitude. You can then hold on the target and ease your plane through a smooth pull out.



HORRIBLE MISTAKE DEPARTMENT

"Sirs:

In re Grampaw Pettibone's answer to Quiz Question No. 1 in the Oct. 1946 issue of NAVAL AVIATION NEWS—Please put me first on your list when you find an F6F whose prop turns up 2700 RPM for take-off—

THAT I WANT TO HEAR!

Respy,
Lt. Cdr. —"

Dear Sir:

You're number 14 on the list, but only because your letter had more travel time than some others. From the volume of mail and phone calls last month's answer to the question—"What does a tachometer indicate?"—created a roar much like the one you want to hear from your F6F. Thanks to you and all the other boys for keeping me on my toes. Tachometers indicate engine RPM except in engines with a direct drive to the propeller, in which case they, of course, indicate both propeller and engine RPM.

As ever,
G. P.

P.S.—As the years creep up on me, I have to rely more and more on you sharp-eyed lads. It's heart-warming, though, to realize that I still have a goodly number of intelligent readers who won't let an old man put anything over on them.

PV-2 Single Engine Ride

While on a routine ferry flight from Hutchinson, Kansas, to Grosse Ile, Michigan in a PV-2, a former NATS transport pilot encountered difficulty with the starboard engine losing great quantities of oil. Unable to pump sufficient oil from his auxiliary tank to keep the oil at a minimum level, he had to cut the starboard engine and feather the propeller. At this time the plane was flying along a short distance from Columbia, Missouri.

Lambert Field at St. Louis lay a little over 100 miles ahead on course and NAS OLATHE, Kansas, about 125 miles behind. The pilot felt that a future take-off from the airport at Columbia might be difficult and with a good tail wind he elected to continue on to Lambert Field where he made a successful single engine landing without any further difficulty.

Grampaw Pettibone says:

I'm certainly glad that you were thoroughly familiar with the PV-2 single engine procedures and with the technique of flying this plane on one engine. My files include a good many cases of pilots who are not alive today because they did not know how to handle just such an emergency. I realize that you had to make a quick decision when you elected to continue on course to St. Louis and I do not want to seem too critical of the choice you made. I do feel, however, that it would have been safer to land immediately at the Columbia Airport. The paved runways there are over 3000 feet in length. While you would not have had much of a margin for error in a single engine approach, I think it would have been a little safer to land there rather than to fly a hundred miles farther to a larger airfield. There is always a chance of encountering trouble with the good engine at the power settings required for single engine operations, and it is usually the best bet to land at the first available airport.

"Dear Grampaw Pettibone:

"I am surprised at you. While your instruction for a correct and safe way to practice simulated single-engine landings is satisfactory, don't you believe that it would be better to get above six thousand feet and feather your engine followed by a trimming of the ship with the rudder and other tabs and noting their actual position? Upon completion of this operation, start

your engine and then cut your throttle to the manifold pressure that will give you the same trim that you obtained in the full feathered position. This was standard procedure used in the transition land plane training for *Liberators*.

"Like you, I am amazed that any competent pilot would feather an engine completely and practice actual landings.

Sincerely,
CAPTAIN —, USN."



My dear Captain Blank:

The procedures you outline
Are more precise than mine,
And I gladly print your letter
Since it does the job much better.

But when you're as old as I am,
You will know the King of Siam
Can't be right on every item,
No matter how you fight 'em.

So I think you'd best disguise
This matter of "surprise."
There's another point of view
And I hold it to be true.

It's to do your gol darn best
And be grateful to the rest
Who help you in the quest
For further knowledge.

Sincerely,
Grampaw Pettibone.

No! No! A Thousand Times NO!

The pilot of an SNB was in his final approach to a landing when he noticed a strong cross-wind from the right. He was at about 50 feet and holding an airspeed of 85 knots. He attempted to correct for the cross-wind condition by using 30" of manifold pressure on the right engine and 15" on the left. With this variation of power settings, the right wing came up and the port wing dropped, throwing the plane into a skid. Before the pilot could correct the throttle settings, the plane stalled and struck the ground on the port wing. A fire broke out immediately and destroyed the plane. The pilot and passengers escaped without injury.



Grampaw Pettibone Says:

I've heard of "throttle jockeys," but this fellow is in a class by himself. I hope he copyrights this maneuver, so that no one else can use it.

Aching Back Dept!

Here's one for the fighter pilots who aren't too familiar with the proper use of the anti-blackout suit. While attempting to gain a good position on his opponent in a tactical exercise, a pilot of an F4U entered a steep climbing turn. His plane stalled and entered a spin, from which he recovered after one turn.

As the pilot did not feel that anything extraordinary had happened to his plane, he engaged in some mild maneuvers before landing. Later a ground check revealed a wrinkled fuselage, popped rivets and a drooping horizontal stabilizer. Oh yes, the accelerometer read 11.5 G's!



Grampaw Pettibone Says:

ELEVEN AND A HALF G's! The accelerometer was put there to keep you and your plane out of trouble. And that anti-blackout suit was designed to keep you from greying out and blacking-out in those tight turns. The advantages gained by using these aids are obvious. All of you fighter pilots should use them as aids and not as something to help you pull the wings off your airplane, or wrinkle its fuselage. In the case above, our friend had very limited experience in the use of the "G" suit, and he was lucky that the plane held together long enough to get him back to his base. After all the wings aren't built to stand a pull of over 130,000 lbs.

Before using a G suit, read Flight Safety Bulletin No. 3-45 and learn the stress limitations of your aircraft.

WINTER SAFETY HINTS

Grampaw doesn't want any of his boys to end up in the Winter Flight Statistics File. Follow the Winter safety rules listed below and live to enjoy the Spring.

1. Get all the weather information you can before every flight. Pay particular attention to safe altitudes to avoid icing conditions.
2. Learn the correct way to operate every piece of de-icing equipment on your airplane before you get in the air.
3. Immediately before take-off, check all flight controls for free movement and clear engines. Never take off with snow or frost on your airplane.
4. If you encounter instrument weather on a CFR flight plan, DON'T PUSH THROUGH. Land at the nearest airport where contact conditions prevail.
5. Know the runway conditions before you land. If in doubt ask the tower operator. Icy spots on the runway caused plenty of groundloops and nose-ups last Winter.

TBM Loops on Take-Off!

During field carrier landing practice the pilot of a TBM made his third touch and go landing and started a take-off. Shortly after becoming airborne the stick assumed the full-back position and froze there. At this time the airspeed was about 100 knots; wheels were up; and flaps down. The pilot immediately rolled in full down tab and then tried to force the stick forward with both hands.

He had aileron control but could not move the stick forward. At this time the plane had completed about one-third of a loop, and the pilot pushed the throttle full forward and bailed out. The aircraft was at about 300-400 feet and approaching the inverted position from which it spun to destruction a few seconds later. The pilot was uninjured. Unfortunately the aircraft burned after crashing which prevented determination of the cause of this freakish accident.



Grampaw Pettibone says:

Congratulations, son. I'll take my hat off to any pilot who can get out of a spot like that with a whole skin. You sized up the situation correctly and acted fast. That's what it takes—and that's why you're able to tell about it today. This accident is really one for the books and you win this month's honors for alertness.

Swimming Ability Pays Off

If any of you fellows are still griping about the swim checkouts and castaway drills, you'll be interested in a report which Grampaw just received. It concerns an Ensign who bailed out over water after an engine failure during night formation flying. Although the other planes in the formation marked the spot and extensive searches were carried out all that night and the next day, the rescue planes were not able to spot the pilot. However, the hardy Ensign took care of his own rescue. With the aid of his inflated life jacket and plenty of what it takes, he SWAM ASHORE 14 HOURS LATER.



DID YOU KNOW?



PHOTO OF MODEL XP4M SHOWS TANDEM MOUNTS OF BOTH RADIAL AND JET POWER PLANTS

NEW XP4M USES JET ENGINES

BOASTING a speed that has long been reserved for fighters, the Navy's XP4M recently completed its initial flight test with flying colors. Two new turbo-jet engines, operating in tandem with conventional power plants, can push the large patrol bomber to a top speed of over 390 mph.

Two conventional reciprocating engines, Pratt & Whitney R-4360-4's of 3000 hp. each, are used for normal cruising but patrol plane pilots will be glad to note that the plane will cruise on any combination of two engines. The turbo-jets, Allison I-40-4's, are mounted in tandem directly behind each reciprocating power plant.

Rated at 4000 lbs. static thrust each, the turbo-jets are used for heavy load take-off, fast climb and operations at rated military power. Service ceiling with radial engines alone is 20,000 ft. and with all four power plants the plane will operate at 30,000 ft.

The XP4M, designed and built by the Glenn L. Martin Company in cooperation with BuAer, can carry out long-range reconnaissance, bombing or mine-laying missions. The long-range configuration has a gross weight of approximately 78,000 lbs., a range of 3940 miles and carries 4200 gallons of fuel.

As a mine layer, the plane operates at a gross weight of approximately 76,000 lbs. with a range of 2740 miles on

2800 gallons. Armament consists of a 20 mm. in the tail, and 50 calibers in nose, deck and side waist turrets.

The XP4M can be fitted to carry any of the following combinations: twelve 650-lb. depth charges, eight 1000-lb. mines, six 2000-lb. mines, one 12,000-lb. *Tallboy* or two 2165 lb. torpedoes.

Old LST's Make Good Targets Squadron Finds Them Difficult to Sink

VB-4—This squadron obtained some worthwhile and realistic bombing and rocket training recently by using some decrepit old LST's around Saipan for targets. As part of the training syllabus, VB-4 attacked them with 500- and 1000-lb. GP bombs, 5" aircraft rockets and 20 mm. cannon.

Results of the attacks showed only too well what pilots can do and what they might expect of such craft since most of them sank rather slowly, even though direct hits were obtained.

Briefings emphasized pilot safety, accuracy and coordination, in that order. Naturally, safety ranks first in consideration of every man and VB-4 had not one accident during these attacks. Low pullouts always have been a primary concern of flight leaders because more fatalities from low recoveries than any other cause have been reported by other VB's in the past. VB-4 tempers

enthusiasm with judgment and takes a near miss rather than a life.

Accuracy, the measure of success, is stressed accordingly. The squadron found in attacks on the LST's that practice is necessary for good results. The third requisite, coordination, was stressed until each plane arrived with its lethal load within seconds of its predetermined time. The squadron is far from perfect, but, by using actual targets and live ammo, is better trained.

NATS Uses New Traffic Reports System Saves Thousands of Man-Hours

NAS PATUXENT RIVER—A new centralized traffic reporting plan originated by Lt. R. H. James, assistant records officer of NATS Squadron One, was adopted by VR-7 after a month's trial by VR-1.

The new system of flexible analysis makes it possible to: 1. Show the day-to-day movements of passengers and cargo over routes and between detachments, for any period of time; 2. Centralize all traffic statistics at squadron space control offices and keep them up to date at all times; 3. Give a complete running picture of every flight; and 4. Eliminate semi-monthly detachment traffic statistic reports, thereby saving thousands of man hours of work.

The system is made possible by coordinating and simplifying information gained from load messages.

SHOW ME THE WAY TO GO HOME

RADIUS OF ACTION

Conduct a four hour straight line search from base departing at 1800 GCT.

Given:

1. Base position, Lat. 21° 50' N., Long. 157° 35' W.
2. Projected course 000° T.
3. Prevailing wind from 032° T., velocity 20K.
4. True air speed, 165K.

To find:

1. True heading, (a) out, (b) in.
2. Ground speed (a) out, (b) in.
3. (a) time to turn, (b) position.

(Answers on Page 40)

Air Acrobatics Clarified in ACL

Normal Flight With WR's Aboard

Aviation Circular Letter No. 127-46 of 22 August defines acrobatics as "intentional maneuvers other than: a. take-off, b. landing, c. horizontal flight in normal attitude, d. climbing, e. turning, f. gliding, g. spiraling, h. diving and recovering as necessitated by dive bombing and practicing therefor."

Naval and Marine aircraft are prohibited from engaging in any acrobatic maneuver unless there is a minimum of 1500 feet altitude above the terrain for the starting, execution, and completion of such acrobatic maneuver and return to normal flight.

Naval aircraft carrying as passengers members of any of the armed services' women's corps are limited to normal flight. Acrobatics or any violent maneuvers are prohibited.

Current BUAER Technical Orders contain restrictions on acrobatic maneuvers for various types of aircraft. Technical Note #8-46 states in general the restrictions imposed on maneuvers of all aircraft.

Tarawa Gets Ready for Storms

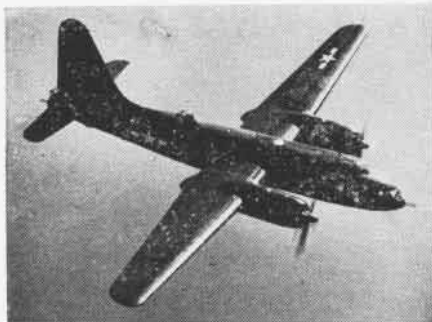
Air Group Men Help Tie Down Planes

VT-4—While enroute from Saipan to Yokosuka, Japan, the U.S.S. *Tarawa* (CV-40) received word of an approaching typhoon and began immediate preparations to weather the blow which was scheduled to arrive soon.

The Air Group swung into action to secure aircraft on the deck. Flight deck crews were augmented by pilots and aircrewmembers. The "come-alongs" grunted, the winches whizzed—each aircraft was made fast to the deck by five $\frac{1}{2}$ " cables. Two were used on each landing gear, one on the tail.

The former, arranged fore and aft, at right angles to each other, and sloping 45° from the deck, combined with the customary $\frac{1}{2}$ " tie-down reels used as an added precaution, molded a symmetrical pattern. Wings of the squadron's TBM's were tied together in folded position by passing a line through the jacking tube opening in the after end of the fuselage.

Night and day 'round the clock' watches were stood by pilots of the Air Group. Tension was at highest pitch; the question of whether the aircraft would be able to last out the 'big blow' was on everyone's lips. Fortunately, the ships of the task force succeeded in avoiding the brunt of the storm. However, moderately high seas and winds were encountered. The precautions proved to be unnecessary but all hands were indoctrinated thoroughly in proper securing methods for their planes.



PROVED P2V PERFORMANCE GETS ENCORE

Navy Orders More P2V Aircraft

Neptune Is Patrol Plane of Peace Era

With national attention focused on the performance of the *Neptune*, P2V, by the achievement of the *Turtle* in October, there is added interest in the Navy's recent contract with Lockheed Aircraft Corporation for 30 additional P2V-2's. The new contract, which preceded the record-breaking flight by several weeks, calls for planes and spare parts valued at approximately \$16,000,000. The P2V will be in production throughout 1947.

Previous orders, totaling approximately \$66,000,000, had included three experimental models, 14 P2V-1's and 51 P2V-2's.

Unique combination of both extreme range and speed enable the P2V to cover the widest expanse of ocean and land in single missions, outdistancing even four-motored aircraft. It has a wing span of 100 feet, weighs 58,000 pounds, is 75 feet 6 inches long and 28 feet 1 inch high. The P2V's two Wright Duplex Cyclone engines, the same type as used on the *Constellation*, generate 5,000 horsepower.

Present Navy schedules call for *Neptune* production to reach delivery of

six airplanes a month. Most of the planes will go to the fleet.

Good Pilots Have to Work At It

Reserves Find They Get Rusty Quickly

NAS LOS ALAMITOS—After three months' operation under the new Reserve Training Program at this station, some insight into problems of maintaining military proficiency of Organized Reserve officers has been gained.

It is easiest to keep up pilot proficiency among all phases of training. However, it is noted that considerable reinforcement of flying habits, procedures, and thinking are going to be the most important phases of flight training.

The problems connected with training of ground officers and crewmen vary with the fields involved. It now appears that the air combat intelligence program will require considerable streamlining. The peacetime ACI officer is deprived of the most interesting phase of his work, that of briefing pilots on combat areas.

Aside from coordination and dissemination of information on routine flight operations and collection of information on new types of equipment and techniques, it is suggested that the ACI training program emphasize procedures involved in acquiring combat information and its dissemination.

Maintenance officers and crewmen are faced with an overwhelming amount of printed information when the mass of material is considered in relation to the amount of time available to the Inactive Reserve officer. An attempt will be made by this station to boil down the various publications for dissemination to these officers. An organization for ground training of Reserve enlisted personnel also is underway.



COME CHRISTMAS time, no matter where the Navy carrier or squadron is located, thoughts of pilots and aircrewmembers turn to colorful celebrations they enjoyed as kids. Sometimes there are trees, sometimes not. When there is none, as in the *Antietam's* VB ready room last winter, the men make-do with tinsel and whatever Santa Claus garb they can scrape up from sick bay or elsewhere. Santa may lack wrinkles, but he has those important gifts



Inyokern Transport Pilots Aid Proxy Mothers in Saving Newborn

Eager Infant, Expedited Embryo, Gains on Milk Delivered by Navy Flight Crews

THIS is directed to the self-styled joker who painted the nose of his **44D** transport on Saipan with a cow (the four-legged kind) and a reluctant milkmaid and inscribed beneath this quote, "What good is production without transportation?"

You didn't realize it then, Mac, but your little joke was destined to be quoted in satirical fashion out at NAS INYOKERN, Calif., in just a little more than a year from the date you daubed the question on your *Skytrain*.

For August 25 of this year found Gny. Sgt. C. J. Powers, USMC, begging for a little transportation for a product being produced in comparatively enormous quantities just 200 miles away.

It seems that Sgt. Powers' wife, Mary, had given birth at lonely, desert-bound Inyokern prematurely to a son. The early arrival had left her unable to give the little one her own milk. A formula of dairy milk failed to suffice the youngster, in fact, he lost five ounces in no time at all.

If you have ever tried living with just 3 lbs. and 8 ounces between the bed blankets, you can imagine what a hard time Junior was having and what a rough spot his pa was in. There were no other mothers with newly-born children at the isolated base, so mother's milk had to be brought from Los Angeles.

The pilots of the daily flight to Downey Field were sworn into "Milk Truckers Local 211," issued caps and black leather bow ties and given orders to bring back refrigerated containers of mother's milk which were at Downey each morning.

No sooner authorized than done.

A two-weeks ritual of this and Junior

and Mama were released to active duty . . . so you see, Mac, you're right. Production just ain't no good without transportation!

GCA Standard for Air Stations

Navy Adopts Radar Approach System

So successful has ground controlled approach proved in bringing down Navy pilots marooned up in the soup that CNO has directed the system as standard for the Naval service and expects to have 39 units in operation by next summer at major air stations.

Training of crews has been underway at NAS BANANA RIVER for several months (NANews, May 1946). A total of 15,000 landings have been made with GCA at operational air stations since May 1944 and 50,000 landings at training schools. Of the former, 469 landings were under actual instrument weather conditions. No loss of planes or lives was incurred.

Demonstrations of the Navy's GCA were made recently at Indianapolis before representatives of the Provisional International Civil Aviation Organization.

Airfields in the United States which already have GCA sets in operation or will have by next summer are Whidby Island, Seattle, Miramar, Oakland, Olathe, Charlestown, Patuxent River, Oceana, Moffett Field, Corpus Christi, Jacksonville, Saufley Field, El Toro, Cherry Point, Atlantic City, Squantum, Atlanta, Glenview, Minneapolis, Memphis, Grosse Ile, New Orleans, Willow Grove, St. Louis, Columbus, Dallas and Key West.

Overseas bases which have or will have GCA under present plans are Argentinia, Kodiak, Tsingtao, Peiping,

Shanghai, Guam, Barber's Point, Attu, Samar, Guantanamo and Coco Solo.

The training school at Banana River is slated to move to Olathe by 1 December to relieve overcrowding at the Florida base caused by closure of Miami and Ft. Lauderdale advance training activities.

Pilots Learn About Submarines

To Repay Sub Men With Rides in Plane

VP-124—Since submarines and airplanes seem destined to team up even more closely in any future wars, this squadron has been giving its pilots undersea experience with SubsPac at Pearl Harbor. Officers in groups of two or three have been going along with the submarines on their local exercises, which include dives and target approaches.

There is great interest shown in the craft of the opposite type of service, especially in view of the close cooperation between subs and patrol aircraft during the war. Submarine officers explain workings and principles of the submersibles to the pilots. It is expected that the visits will be returned aboard some flights of *Privateers*.

It is hoped that trips aboard an operating carrier can be arranged. Most of our pilots have checked out in carrier types of naval aircraft. A series of lectures on guided missiles have been given. The squadron believes that these observation trips aboard other naval craft, and among other naval aviation types, add breadth to the somewhat limited naval experience of aviators attached who have recently changed over from reserves to the Regular Navy. It is believed this program will aid in preparing these officers for the line school at Newport.

Atlanta Helps Out Georgia Tech

Station Houses Students of Colleges

NAS ATLANTA—The Navy has been called on to help out with the housing shortage in connection with education in postwar America and this station is helping by providing quarters for hundreds of college students.

The station is furnishing housing, messing and classroom facilities for students of Emory University and the Georgia School of Technology. A total of nine buildings will house 700 students from Georgia Tech and two others were set aside for those from Emory. In addition, 200 commuting students use the classroom facilities.

The standard curriculum of the universities is taught here from freshman to senior year. Three-fourths of the students are veterans; some are Navy officers on active duty taking up college work to get degrees or extra credits.



WAVE LT. WELCOMES MONKS TO ALAMEDA

NATS Host to Airborne Monkeys

Hawaii Mars Carries Chattering Cargo

Converted to a flying zoo, the NATS *Hawaii Mars* recently delivered 143 satisfied monkeys from Manila to NAS ALAMEDA. The *Mars* took off from Manila on 30 September, arriving at Alameda on 5 October.

NATS coddled the jibbering horde all the way, with humidity and heat control in the main cargo compartment and tropical fruit for chow. The monkeys are destined for various institutions engaged in the battle against polio.

Lured from the jungle by bananas and sweet potatoes, the monkeys were trapped in cages and transported 600 miles to Manila by chartered planes. Only complaint on NATS service was registered just outside Alameda when all "chow" was thrown overboard in accordance with agricultural laws.

Army ambulances rushed the monkeys to San Francisco's Letterman Hospital for further distribution. Among institutions scheduled to use this and other shipments of monkeys for polio research are Stanford, University of California, Yale, Johns Hopkins and the University of Michigan.

At the urgent request of the National Foundation for Infantile Paralysis, Inc., founded by Franklin D. Roosevelt, COMNATS ordered diversion of the *Mars* from normal duties. Arrival of the monkeys culminated five months of planning by the San Francisco Chamber of Commerce and Connal Bros., an importing firm.

JRB Link Gives All the Answers

NATS Squadron Uses Devices Widely

VR-5—After using the new Link trainers to teach Beechcraft operation, this squadron has some words for skeptical Link-trainer-wise pilots.

At take-off the trainer yaws to the left when throttle is pushed forward. When airborne and the prop is put in high pitch, the trainer tachometer shows a decrease, and the manifold pressure a corresponding increase. When flaps are raised, airspeed increases and the trainer noses down.

Raising and lowering the landing

gear produces similar indications. Opening and closing the cowl flaps produces the correct indication on cylinder head temperature and oil temperature. Since engine noise is realistically reproduced, if all engine instruments are not reading correctly the engine runs "rough" and eventually "conks out."

The trainers are used to teach all phases of elementary and advanced instrument flying, including radio navigation, range and loop orientation, instrument landing systems, voice procedure, and flight and engine instrument familiarization.

'Dago' Pilots Get Bawlings Out

Weekly Tattler Lists Flight Boneheads

NAS SAN DIEGO—Dilberts and other flight regulation ignorers get themselves bawled out anonymously and sometimes in poetry in the Operations department's new *Tower Tattler*, a weekly mimeographed sheet that lists their plane number and flight time.

The *Tattler* deals with small infractions of flight rules which constantly are taking place, but which are not considered important enough to warrant an official report. For instance:

"TBM #401 made a low approach to Mat 26 on Friday 13 September at 1040. Only a few feet of clearance over the parked aircraft was maintained. Grampaw Pettibone never did that!"

Or:

"Five fox seven and a flight of six
"Made an approach like a bunch of hicks
"Much too fast and too close together,
"The Tower Duty Officer grabbed for leather.

"An Ad building pylon is okey with us,
"But the C.O. and Staff kick up a fuss,
"So let's do it right with an oval approach,
"And get along with our Boss and Coach."

Then there's the FR pilot who liked to taxi fast. The *Tattler* opined "We

don't have a banked track for you to race on, so let's slow down just a little. At least try to keep under flying speed on the taxiways."

Good observance of flight rules is necessary on a field like San Diego's, where as many as 967 landings are made daily.

Blimp, P-Boat Help Out in Rescue

Five Men Adrift 5 Days off New Jersey

A blimp from NAS LAKEHURST and a flying boat from NAS ATLANTIC CITY teamed up to help in the rescue of five men missing at sea in a 36-foot motor boat off the New Jersey coast for four days.

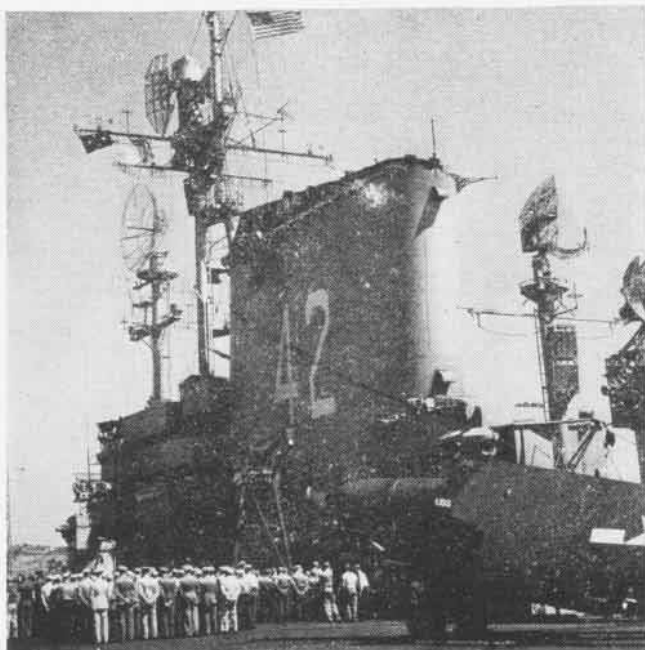
The P-boat first spotted the boat after 10 planes, a blimp, five Coast Guard cutters and a buoy tender all were searching for the missing vessel. The blimp hovered over it until a cutter came alongside and took off the men, who were said to be in fair condition. They had gone on a fishing trip with one day's supply of food and water.

A Navy plane spotted it the day after it went out and dropped a flare when forced to turn back for refueling. By the time surface craft arrived the boat was lost again. Among the survivors was an Episcopal missionary.

VRJ-1—Anyone who really wants to see the world should join this utility transport squadron under NATS. Since 1 January, planes from this unit have visited the following countries: China, India, Japan, Alaska, Aleutians, Italy, Philippines, West Indies, Brazil, Canal Zone, Azores, Bermuda, Canada, Germany, Mexico, Uruguay, Venezuela, Peru, Chile, Ecuador, Guatemala, Iceland, England, France, Algeria, Portugal, Malay States, Siam, Egypt, Greece, Ceylon, Arabia, practically every island in the Pacific and every NAS in the States, plus some municipal airports.



RUSSIAN PILOTS turned to the United States Navy in 1944 to learn the mysteries of flying boats. In a lend-lease enterprise termed "Project Zebra," Russian crews were indoctrinated for the ferrying of PBN-1 aircraft being delivered to the Russian Government under lend-lease agreement. Each crew received 80 hours' flight training as well as ground school instructions. Photo shows Russian crews and their American instructors



Four-star flag of Admiral Hewitt flies from port yardarm as President Carmona of Portugal visits F.D.R. in Lisbon harbor



FDR crewmen and Marines spend their liberty inspecting historic spotlighted ruins of the Parthenon on the Acropolis at Athens

Before it took off for the "tour," the ship picked up a group of Annapolis midshipmen and took them for an indoctrination trip to Quonset Point. Another group came aboard later

CARRIERS CRUISE IN EUROPEAN WATERS

THE MEDITERRANEAN SEA, which once saw battles between American men-of-war and North African pirates, was furrowed recently by the bows of two U. S. carriers big enough to use those men-of-war for captain's gigs or maybe liberty launches.

In the biggest Mediterranean operation by U. S. ships since carriers early in World War II ferried planes to Malta and participated in the North African and Southern France invasions, the CVB *Franklin Delano Roosevelt* and eight other vessels cruised in the sea. They called at Naples, Athens, Gibraltar, Malta, Algiers, Tangier, Casablanca and Lisbon on the trip.

Following the *F.D.R.* cruise, the CV *Randolph* went to the Mediterranean area for a cruise of numerous ports.

and went to Guantanamo Bay to learn carrier practice.

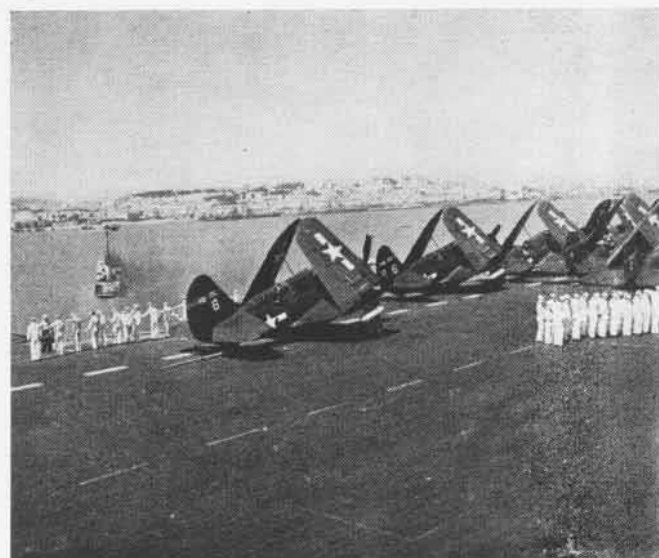
Seventy-three bombers and fighters from the *F.D.R.* spelled out the ship's initials over Athens on September 9 while the convoy steamed away from the politically strife-torn city toward its next port of call.

While at Lisbon en route to Greece, the *Roosevelt* flew the Portuguese ensign on the occasion of a visit by President Antonio Carmona to Admiral H. K. Hewitt, Commander of Naval Forces in Europe.

The aerial show over Athens was similar to one its air group put on when the ship was commissioned. Some international sources opposed the maneuver as a "warlike display," despite the fact the Greek election was held several days before the exhibition of formation flying was staged.



Regent of Greece and Admiral John H. Cassady inspect crew of *Franklin D. Roosevelt* as it visits port of Athens during cruise



City of Lisbon, Portugal, looms up behind folded wings of *Hell-divers* of *Roosevelt* prior to sailing for Italian and Greek ports

AFLOAT AND ASHORE

VBF-81—Contestant for honors as champion globe-trotter is this bombing-fighting squadron, which has traveled 10,000 miles in six weeks. Aboard the *Princeton*, it operated from Hawaii to Manila and from there to Saipan. Considerable difficulty was experienced in using solid tail wheel tires on coral runways at Kobler Field, Saipan. No spares were available for the F4U-4's and no pneumatic tail wheel tires could be procured. It is suggested that carrier-based F4U squadrons expecting to be based in the western Pacific area provide themselves with pneumatic tires and sufficient solid tire spares.

NAS TILLAMOOK—The prompt action of Lt. (jg) Cogswell prevented a small forest fire near Beaver Creek, Oregon, from becoming a major conflagration. While testing an FM in this vicinity, he noticed smoke rising from the terrain below. Cutting the test short he zoomed back to the air base and notified the District Forest Supervisor. A fire crew extinguished the blaze before serious damage could be done.—*NAST News Bulletin*.

VR-3—Anticipating instrument winter weather, VR-3 requalified its pilots in the use of ground-controlled approach equipment, requiring each to make five GCA approaches. They also are being refreshed in oil dilution procedures and handling of aircraft icing. Lectures are given in use of Bartow high intensity lighting on airfields which are a great aid to pilots during low visibility periods.

VBF 82—Four F4U pilots of this squadron pulled some interesting duty, flying in the Royal Canadian Air Force air show in Winnipeg. They reported many unofficial demonstrations of appreciation, such as this remark by a young woman to one of the ensigns: "Why wasn't I born in Tennessee so I'd have had a fighting chance with you?" Nothing slow about our Canadian cousins.

MCAS CHERRY POINT—Nimitz, Kinkaid, and MacArthur were recently discharged at this separation center in an unimpressive ceremony. Sgt. Gerald Nimitz, T/Sgt. Arthur Kinkaid, and Corp. Leonard MacArthur were in no way related to the high ranking braid, however.—*The Windsock*.

NAS MOFFETT FIELD—Permission has been granted the Douglas Leigh Sky Advertising Corp. to use facilities to operate a blimp at this station. Bureau of Yards and Docks leased space in Hangar No. 1 for the company to use a lighter-than-air craft it purchased recently.—*Moffett News*.

NAS CORPUS CHRISTI—The hurricane which did not come off in Florida recently gave beaching crews here plenty of practice when more than 60 multi-engined sea-

planes were evacuated to this station from Florida. The entire operation was carried out to simulate an advanced base landing problem such as at Iwo Jima or Okinawa. All 60 planes arrived in one day. Hazardous conditions required beaching and haven for 31 PBV's. Planes were hauled out of the water at about 10-minute intervals for seven hours.—*The Beam*.

NAS SAN DIEGO—Five hundred civilian employees who were on leave were expecting to receive their weekly and bi-weekly checks by mail recently. Before they could get them, however, they had to sign affidavits that they were not members of any organization which asserted the right to strike against the government. Those 500 were contacted by mail and notified of the situation. Disbursing office furnished them with affidavits and instructions.

NAS TRINIDAD—To meet the demand for housing for dependents of enlisted men, this station has converted several surplus B.O.Q.'s into quarters for enlisted men's families.

With the lifting of restrictions for families coming to the area, one of the biggest problems has been to find adequate housing for them.

NATTC WARD ISLAND—Those kings of all hobby "nuts"—the radio hams—have a chance to pursue their art here with formation of the Ward Island Amateur Radio Club. It has transmitters on the 10- and 20-meter bands. W5WIR has made more than 200 contacts by radio-telephone to places as far away as Hawaii, Puerto Rico and Canada.—*Wardial*.

NAS JACKSONVILLE—The station was all ready for the big hurricane which threatened Florida recently, but nothing happened—the storm petered out before it got here. All loose gear and planes had been tied down and inside buildings, furniture moved away from bulkheads. Heaviest wind recorded was 47 knots.—*Jax Air News*.

NAS ALAMEDA—The A&R department at this station has been assigned a difficult job—its aircraft repair schedule calls for an increase of 25 percent above wartime peak production. This is despite manpower cut in half by postwar economy and 24-hour operations cut to one shift a day. During the war 80-odd *Hellcats* a month rolled off the line.—*The Carrier*.

NATS, ATLANTIC—Largest payload ever carried by a VR-1 R5D was flown from Charleston, S. C., to Floyd Bennett Field, N. Y., weighing 19,310 pounds. All extra equipment and ballast was removed to accommodate the 545-cubic foot extra cargo. VR-1 also recently carried \$100,000 worth of scientific instruments from *Operations Crossroads*, weighing 5,162 pounds.

NAS OLATHE—When the ceiling is below 1000 feet and the visibility is less than 1½ miles, the CCA unit at this station runs on a 24-hour basis. Over 600 approaches have been made since the unit arrived last November. It has operated with success in ceilings as low as 50 feet and visibility down to ½ mile.

NAS QUONSET POINT—Eleven Rhode Island youths had themselves a 1,300-mile cruise by Navy plane, aircraft carrier and LCI in the interests of science, a tour arranged by the Office of Naval Research. All were outstanding scientific students and the cruise was the Navy's way of showing the part science plays in a modern Navy. They went aboard the *Randolph* and watched aircraft operations off Norfolk.—*Quonset Scout*.

NAS NEW ORLEANS—Judging from results of first tests given Reserve fliers, most aviators are exceedingly "rusty" on fundamentals of flight. Before they can make any cross country flights from New Orleans, they must pass tests on civil air regulations, aerology, radio voice procedure, plus a Link trainer course in radio range and instrument flying.

VR-5—Ever been flying right over a field and been unable to hear its radio? Then there's the VR-5 plane 200 miles north of Seattle that could hear the pilot in one of VR-11's transports telling Adak Airways it was 2,000 miles south of Adak en route to Honolulu. That's pretty good long distance shouting.

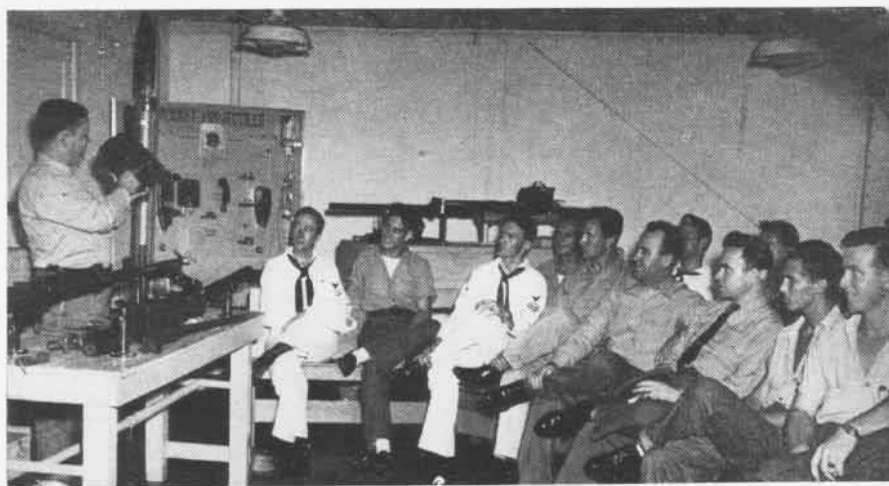
NAS PATUXENT RIVER—This falls under the class of "tough duty." Several high-ranking officers were given the job of sampling three new types of Maxon meals being considered for use on VR-3's planes. They had to eat hamburger steak, pot roast and swiss steak. The chow got the upcheck and NATS passengers on their run will profit.

NAS MOFFETT FIELD—Thirty-eight Waves have gone on duty with NATS as Specialists (V), flight orderlies. Each orderly goes out on either a cargo or passenger "push" hop, returning on the other flight after 48-hour layover in Honolulu. Flight orderlies will average 80 hours a month. Besides flying duty, orderlies will alternate every other month with ground duty in administration or operations.—*Moffett News*.

NATSLANT—A new detachment of NATS has been established at Goose Bay, Labrador. First flight carried the three persons who made up the personnel of this newest VR-1 detachment. The schedule calls for three flights a month to this northern station—on the 5th, 15th and 25th of each month.

NAS PENSACOLA—Swimmers on local beaches have been picking up bothersome skin infection which has been diagnosed by the Naval Hospital as a boring parasite left in the sand by dogs. It gets on its human victims and burrows under the skin, leaving a miniature snake-like track which itches intensely. Scratching often leads to impetigo and boils.—*Gosport*.

RESERVE UNITS WINNING WIDE PUBLICITY



ANACOSTIA RESERVE OFFICERS AND STATIONKEEPERS GET THE WORD ON NEW ORDNANCE

THERE are more ways of getting publicity than going down and asking the home-town editor to write a squib about you. Naval Air Reserve Units are finding out. They are using many ingenious ways to get their messages across.

Take, for instance, San Diego. It passed out leaflets to air station visitors, parked trucks with advertising signs outside employment offices and even had spot announcements made at mid-gate auto races to recruit stationkeepers.

Olathe used its ground controlled approach equipment both to indoctrinate commercial airline pilots and to get publicity for the Reserves. Los Alamitos used a radio program called "Music With Appeal" to spread the word. Norfolk has a permanent information booth it takes along to air shows where its *Corsairs* and *Hellcats* put on flight demonstrations. During the shows, the Group Commander broadcasts special plugs for the Reserves at intermissions.

The Reserve program must have appeal—even ex-Army personnel are joining up. Squantum reported a former captain re-enlisted as a S1c stationkeeper.

Here are some news notes from various NARTU's, telling how they get the public eye or ear through ingenious publicity programs:

▶ **NAS SAN DIEGO**—When downtown dailies did not carry sufficient details about the program, this Unit made an effort to hit the smaller weeklies in the area. This was accomplished by providing aircraft to participate in the local annual fiesta and carnivals. Air show officials were most cooperative in publicizing the program.

Victory Day presented another opportunity for "getting the word" out. The air station held open house and all visitors

were informed of the Reserve program by leaflets distributed at the gate. Bus guides also informed visitors of the location and mission of the unit. A classified ad in the "Help Wanted" section of a local daily brought 112 phone calls in four days. Officers chipped in to pay for the ad.

In addition, three 15-minute radio broadcasts were made. Spot announcements were made at the midget auto races which draw 15,000 crowds weekly. Personal calls were made by stationkeepers who contacted people on the unit's mailing list who had showed interest in the Reserve program. This personal contact work is bringing the best results to date in getting re-enlistments.

Navy trucks parked near employment agencies carried appropriate signs telling of the advantages offered by the Air Reserve—aimed at the veterans who came around to pick up their \$20 weekly unemployment checks. Mimeographed handbills given out inside helped get the message across. This system also worked—even some ex-Army personnel joined up.

▶ **NAS OLATHE**—This Reserve air station's ground controlled approach unit was taken to Kansas City municipal airport recently in response to a request from TWA and Mid-Continent Airlines, as well as the Kansas City Chamber of Commerce and Mayor's Aviation Committee. The unit stayed 10 days and checked out many airline pilots in GCA landings, then was granted an extension of time for further work.

Pilots of both airlines were well pleased with the equipment and a large number of them were given the experience of coming in for landing coached by the GCA crew.

Work of the unit was discussed in a 15-minute radio broadcast over a Kansas City station, featuring Captain W. M. Drane, CO of the station; Lt. Dale White and Lt. (jg) J. J. Gerrity of the GCA unit. A wire recording of the unit bringing in a TWA *Constellation* five times for perfect landings also was a part of the broadcast. The

whole operation brought a great deal of publicity to the station and the Reserve training program.

▶ **NAS MIAMI**—This station was transferred from the Advanced Training Command to Air Reserve, effective 15 November, so the Reserve unit continues in Miami as it has since 1931. A new PBY-5A was received and put to use hauling new members of the Organized Reserve from Tampa area, 200 miles away. Persons who could not join the Reserve because of the distance from Miami now are seeking assignment. During September, stationkeepers received 74 hours of instruction and Inactive Reservists were given 95 hours in all phases of line maintenance and shop work.

▶ **NAS SQUANTUM**—The Marine Reserve flying unit is so popular here it is turning them away. More than 200 qualified men applied for assignment but had to be rejected because it already had its allowed complement. During September Ready Reservists flew 952 hours and Standbys 45. The station has 375 men on active duty as stationkeepers.

▶ **NAS GROSSE ILE**—Despite frequent inclement weather, lack of experienced personnel and shortage of materials, the painting of aircraft with new Reserve colors has progressed. It is estimated that more than half the carrier-type aircraft have been completed. Organized Reserve pilots averaged 3.4 hours in the air and Marines 1.9 hours.

▶ **NAS OTTUMWA**—On 15 September a crowd of more than 35,000 persons attended the air station's open house held in conjunction with the Iowa Centennial celebration. A Naval Air Reserve group of 40 planes from NAS St. Louis presented a show of dive bombing and fighter tactics. The *Blue Angel* flight team climaxed the show with their precision teamwork and skill.

▶ **NAS NORFOLK**—A Public Information Officer has been appointed to get the unit some publicity. Four *Hellcats* and *Corsairs* recently took part in an air show sponsored by Virginia state police and Junior chamber of commerce at Franklin. A crowd of 8,000 persons viewed the show and inspected the PBY-5A in the ground exhibit. Our permanent portable information booth was taken along and Reserve information issued to many interested spectators.

Information for prospective enlisted men is disseminated during air shows, at the U.S. employment office and Navy Yard civilian employment offices. We mailed out about 1500 letters during September to prospects, for a grand total of about 17,000 since the unit started.

▶ **NAS LOS ALAMITOS**—The shortage of newsprint cut down size of newspapers and also cut down on publicity for this unit. Radio publicity continued with the "Music With Appeal" program. Excellent results were gotten from classified adver-

tising in recruiting Reserves. Additional publicity included a visit to the station by members of the Associated Chambers of Commerce of Orange County. They visited various departments and saw planes used for Reserve training. A ground display of several planes was sent to the Long Beach air show.

► **NAS NEW ORLEANS**—Participation in air shows by the Reserve training department continues to draw favorable newspaper publicity and promotes good will. An air show was put on for the Sugar Cane Festival at New Iberia. Since it was only 100 miles away, the show was put on without extra effort as part of the scheduled group syllabus.

► **NAS COLUMBUS**—During September Ready Reserve pilots flew 1,306 hours, highest figure to date and one of the highest by any Reserve station in the country. The figure indicates popularity of the Reserve flying program and will run even higher if weather permits. A total of 242 pilots logged the flight time, 41 of them Marines. Some of the latter flew with VC-42 off the *Scilly* in an air show at Mansfield attended by 95,000 persons; Navy and Marine Reservists took part in a show at Columbus, followed by four appearances at New Martinsville, Clarksburg, Parkersburg and Lancaster shows. Head of the Clarksburg show called their appearance a "thundering success."

► **NAS ANACOSTIA**—A classified ad for stationkeepers hit the jackpot—more than 300 phone calls were received and 45 applicants ordered to duty. Stationkeeper line and engineering personnel are being brought up to date on plane handling and check procedures by educational movies. A projection classroom is being provided to give daily movies. Washington radio stations have been generous with their time in helping publicize the Reserve training program and local newspapers have come through with a good amount of space on doings at the station. CVB-710 pilots took part in an air show at Clarksburg, W. Va., which provided them with good experience and the unit with publicity.

► **NAS BROOKLYN**—Stationkeepers have won their spurs when it comes to keeping aircraft in operating shape. During September, the Reserve unit kept approximately 69 of the 74 planes ready to fly. Pilots got in 1129 hours of flight time. While some stations are having a hard time to get stationkeepers, this unit has 96 "surplus" names which were sent to the command for possible assignment to other activities. A special demonstration of the Celestial Link, Loran and the Link trainer was given to 120 members of the "Quiet Birdmen of America" recently.

► **NAS ATLANTA**—Reserve pilots got some good publicity for the unit when they flew two baby incubators to Macon Mercy Hospital to handle emergency cases there. The unit had a display and booths for recruiting at the 32nd annual Southeastern World's Fair at Lakewood and 10 VMF-351 pilots participated in the All-Georgia air show at Athens. During September the unit sent out 21,000 information pamphlets and

instruction sheets about the Reserve program.

The station has found the way to keep its stewards happy and active—give them music in the mess hall at all times. Four cooks, one baker and one acting commissary steward do 21,000 meals a month.

► **NAS MINNEAPOLIS**—Reserve fliers here demonstrated aerial maneuvers and tactics before 50,000 spectators in four air shows during September. They were at Two Harbors, Chisholm, Hutchinson and Alexandria, Minn.

► **NAS GLENVIEW**—This station piled up the biggest flight time total of any Reserve station for September, with 2,862 hours, representing hops by 256 Organized and 268 Navy and Marine Standby Reserve pilots. The station furnished formation flights of Reservists for air shows at Sheboygan and Richland Center, Wis.; South Bend, Ind.; Mendota, Rockford and Olney, Ill., and Washington, Iowa.

► **NAS JACKSONVILLE**—The Reserve unit here had a busy time during September, participating in the St. Augustine air show, putting on a show for Gen. Jonathan Wainwright at Starke and holding an open house at Jax. The unit recently moved from NAAS Cecil Field to Mainside and 6,000 persons attended the ceremonies and watched 16 Reserve pilots do formation flying, simulated carrier breakup and landings. The crowd was largest ever to visit the air station.

► **NAS MEMPHIS**—Reserves here are doing something besides flying. The Marines take many forms of gunnery and marksmanship training. Enlisted men of FASRON-4 checked out on the .45 automatic pistol and all are qualified to stand armed sentry duty. Work has started on marksmanship qualifications of all air station personnel, who are firing the pistol and carbine. Semi-annual tests of pyrotechnics showed many lots had deteriorated and had to be replaced.

► **NAS SEATTLE**—Plans are being made to provide each veteran collecting unemployment benefits complete data on stationkeeper billets and the Organized Reserve. Classified want-ads in a local paper each week-end paid off in grand style, with 46 more stationkeepers being ordered to duty during September. A fleet of 12 Navy and Marine Reserve combat planes participated in an air show at Pasco, part of a reunion of fliers formerly based there. A dozen also took part in the Portland air show. Officers and men of the unit are appearing before civic and veterans groups to talk on Reserve activities to keep before their minds the vital necessity of maintaining a Reserve for national defense.

► **NAS St. Louis**—Classified ads in local papers are worth their weight in gold as far as recruiting stationkeepers is concerned. About 150 men have enlisted in response to the ads here. The Informal Board of Investigation cracked down on flight violators among Reserve pilots, grounding four for a year and taking the wings away from a fifth and releasing him from the Reserve. Air groups from here participated in shows at Ottumwa and Kratz.



Flying Cruiser might be the nickname for the Navy's new AD-1 because of the firepower it can pack. Besides its pair of 20 mm. cannon in the wings, the *Skyraider* can pack 12 5" HVAR's plus two *Tiny Tims*. Note dive brakes located on the fuselage.

NATS Crossroads Task Big One Many Passengers Flown on Ocean Hops

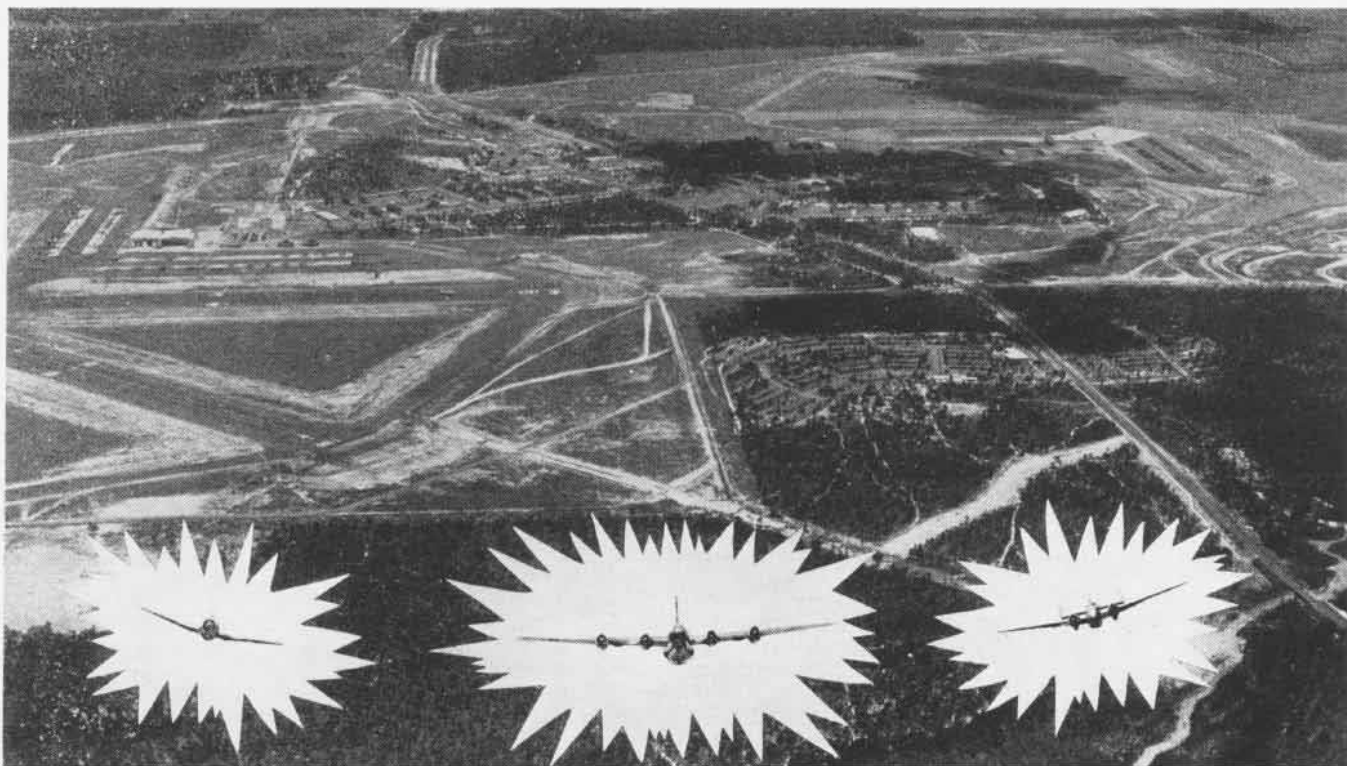
If all the passengers NATS flew across ocean waters to take part in the Bikini atom bomb test could be boiled down to one passenger, that person could have traveled around the world 210 times.

Figures on the number of passenger-miles flown on ocean hops and pounds of freight carried in connection with the two operations recently were compiled. The total trans-ocean travels piled up was 5,260,970 passenger-miles. NATS carried 2,355 persons on the four hops—Oakland-Honolulu, Honolulu-Oakland, Honolulu-Kwajalein and the reverse. All this was without loss of a passenger.

NATS planes carried 361,544 pounds of cargo from Oakland to Honolulu between March and August 10; 18,245 from Honolulu to Oakland, 62,364 from Oakland to domestic air stations and 171,132 from domestic stations to Oakland. Freight carried between Honolulu to Kwajalein was 690,924 lbs. and 15,858 on the reverse of that run. Figures were unavailable as to passenger-miles flown for Crossroads personnel in U. S.



These amphibians played a disastrous game of leap frog when 100 mph. winds swept NAB OROTE POINT last Sept. Damage in the Marianas was estimated at several million and communications were hit.



DOMINATING THE PANORAMA AT WHITING ARE THE PRIVATEERS, HARPOONS, AND HELLCATS USED IN SPECIALIZED PATROL TRAINING

SKY SENTRIES

LOcated at Milton, Florida, NAS WHITING FIELD, an auxiliary of NATB PENSACOLA, is one of the specialized units of the Advanced Training Command. Its site is the highest hill in Florida—230 feet is high among the sand knolls.

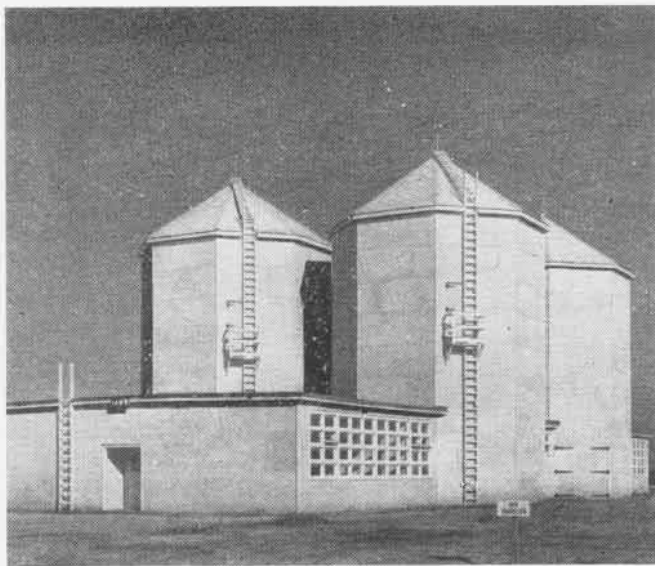
Whiting claims an average percentage of 96% flying weather. From this base long range flights over water can be conducted in the Gulf of Mexico, with the additional advantage of having auxiliary emergency landing bases all around the perimeter of the Gulf. It is particularly suitable for

Loran and Radar navigation training because of the site.

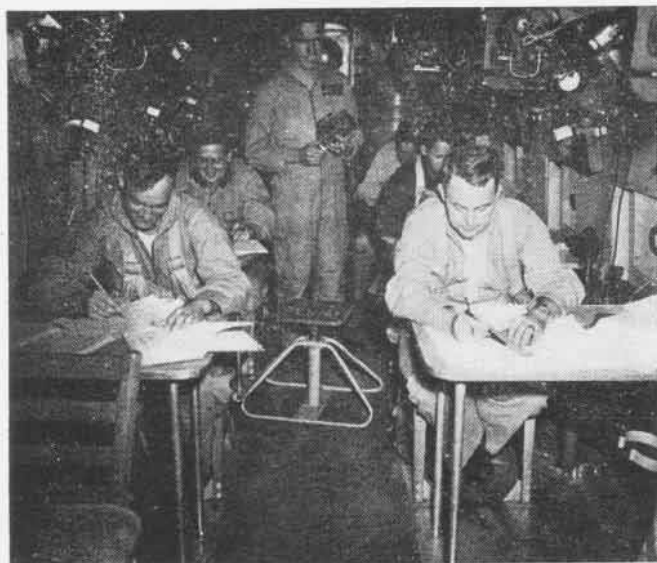
NAS WHITING FIELD is named for Captain Kenneth Whiting, one of the Navy's early aviators. As a lieutenant in 1914 Whiting reported for training at Pensacola. In June of 1917 he landed at Bordeaux with a small detachment of naval aviators, thereby leading the first organized United States fighting force to Europe. A commander in 1924, he piloted a DT-2 on the first catapult shot from the *Langley*, the pioneer aircraft carrier which he later commanded. The reconnaissance squadrons now training at Whiting Field



The celestial link trainer is fully equipped to simulate a night navigation flight, having even a shifting canopy of stars to watch



Bucolic silo-like simplicity of this view of the celestial navigation trainer building gives no hint of the intricate gear inside



All the latest aids to aerial navigation are demonstrated in the navigation flying classroom where students receive practical tests

thus have in the station's name the inspiration of a colorful and distinguished career in naval aviation.

Three advanced training patrol squadrons are operating at NAS WHITING FIELD, and designated naval aviators are processed through one of these to equip them professionally for their chosen duty in fleet aviation units.

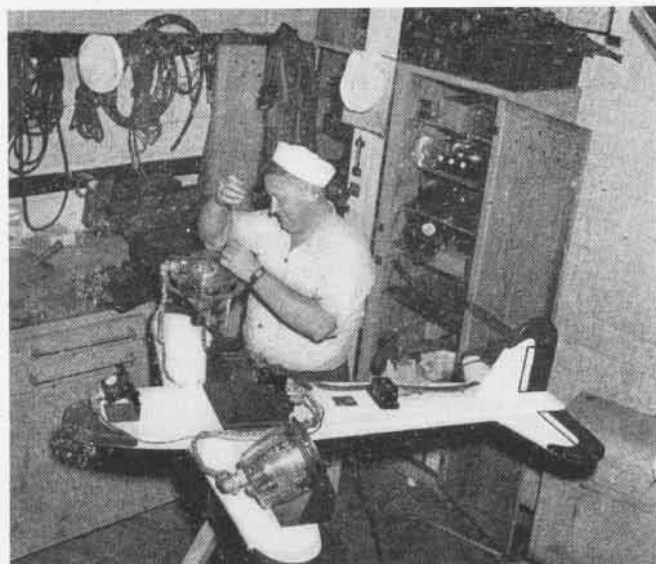
In addition to these squadrons, the Carrier Qualification Training Unit, formerly based at Cecil Field, Jacksonville, was transferred to Whiting in November with a complement of 200 men.

The major role of training is played by the multi-engine, long range reconnaissance training squadron in *Privateers*. Short range search is taught in the *Harpoon*, PV-2, training squadron; while the U. S. Naval School (Photographic Reconnaissance) graduates trained aviators to man VP and VF(P) fleet photographic units.

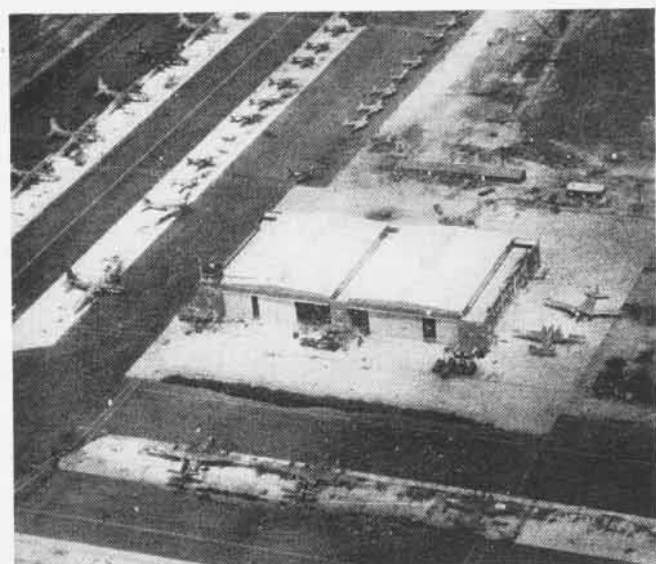
In order to give the future fleet aviator insight into the operations of fleet units and thereby better prepare him for an immediate active part in those operations, each squadron's training syllabus is maintained on a par with the activities to which the student will be assigned after his training.



Fighter planes equipped for photographic recco training are used at Whiting. Here service crewmen put cameras in F6F-5P aircraft



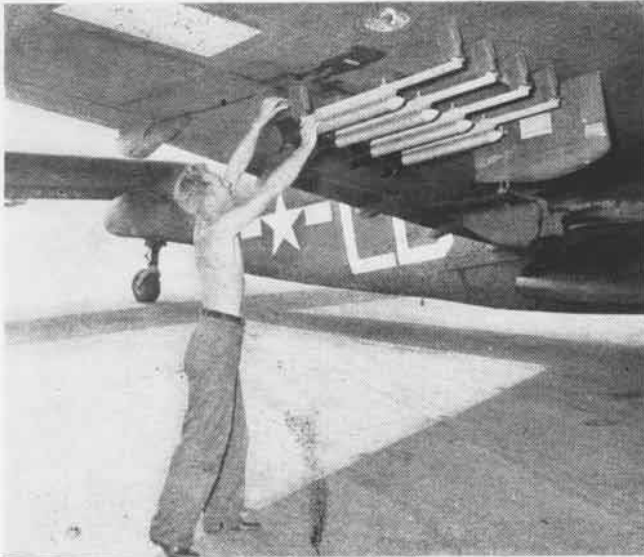
Long range oversea patrols are only as accurate as the aircraft's compasses. Here the transmitter of flux gate compass gets check



Spacious parking ramps and well equipped shops simplify operation of various types of training aircraft based at Whiting Field



Pilot students of photographic reconnaissance lay mosaic map, thus gaining useful knowledge of how to get adequate target coverage



For safety the "pigtail" electrical firing circuit wire is plugged in at the end of runway just before take-off on rocket training flight



Loading ammunition belts into the nose turret of *Privateer* is just another phase of gunnery training that has to be kept up to date



Score on this mast-head bomb training attack counts as "perfect straddle," aim which would mean major damage to a live target

ACCEPTED by the Navy in the early part of 1944, the PB4Y-2 had by September of that year practically replaced the old PB4Y-1 squadrons. These replacement crews were well trained in long range search and reconnaissance, masthead bombing, and anti-submarine warfare. Between September 1944 and the end of the war, the *Privateer* squadrons had made a great name for themselves by sinking hundreds of thousands of tons of enemy shipping. The *Privateer* was instrumental also in seeking out enemy radar stations, gathering important information about them, as well as attacking and destroying many of them.

When the war ended, the *Privateer* continued adding to its long list of accomplishments by tracking typhoons and making available other important weather data. Patrol aircraft, whether in war or peace, constitute an ocean intelligence service of inestimable value.

THE PRIMARY mission of the *Harpoon*, PV-2, activity is to train PPC's and Co-pilots in PV type aircraft in the latest phases of gunnery, bombing and navigation. On completion of their advanced operational training here, pilots are fully qualified to replace crews on sea duty at the present time.

The syllabus of the PV-2 squadron is composed of 36 hours



Future patrol bomber pilots get the word on the intricate secrets of ordnance. Syllabus includes 36 hours of gunnery instruction



Use of search radar extends the eyes of the *Harpoon* patrol planes far out to the horizon. Training is practical, not merely academic



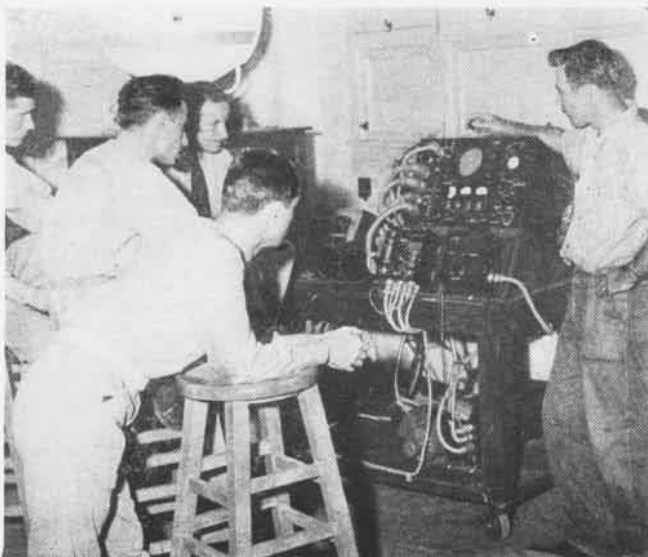
RIGHTLY CALLED THE "BATTLESHIP OF THE AIR," THE PB4Y-2 PRIVATEER HAS TAKEN ON VALUABLE PEACETIME RECONNAISSANCE JOBS

each of gunnery and navigation. The gunnery syllabus includes bombing and strafing moving targets, fixed and free gunnery on a towed sleeve, dummy glide angle runs, firing rockets on a towed target, camera gunnery against fighters, and day and night formation tactics. All bomb and rocket hits are recorded by camera and score sheets.

The U. S. Naval School (Photographic Reconnaissance) has the primary function of introducing fleet-experienced pilots to the art of aerial photographic reconnaissance in both VP and VP(R) type aircraft. This is achieved by a

three-day ground training course and a series of flight assignments which simulate actual combat conditions as closely as possible. The latest techniques and innovations in aerial photography are learned.

Ground training is consolidated for the *Privateer* and *Harpoon* squadrons, equipping the men to assume duties in fleet aviation units as PPC's and Co-Pilots in both type squadrons. Trained in the most recent methods of search and the use of combat and safety equipment, these men are well qualified to take over the exacting and important duties of patrol.



Operation of radar equipment used in *Privateer* is demonstrated to pilots by AETM instructor using bench set-up of APS 15A gear



Their noses aren't in feed bags; it's concentration on mastering radar operation in flying classroom by mass production methods



FURTEK SMILES AFTER SUCCESSFUL LEAP

CHUTE JUMPER GOES ON DIET

A MAN OF ambition is Lt. (jg) A. J. Furtek, attached to the parachute experimental unit at NAS LAKEHURST, first Navy man to be ejected from a cockpit from a plane in flight.

Furtek performed the feat on October 30 (see *High Speed Flight*, pg. 1), but the story behind the story deserves mention. A former chief, "Chubby," as he wants to be known rather than Adolph, wanted to make the experiment.

When he asked for the honor (?) of being blown out of the cockpit going 250 mph. at 5,000 feet, he was told his 200 lbs. were too heavy. So he went on a diet and lost 20 pounds in around two weeks time.

Then they told him he didn't have enough experience with parachute jumping. So he went out and made two or three jumps every day to boost his total to 16 jumps. That did it—they let him have the job.



Saipan to Carry a Link Trainer

Pilots to Brush Up On Night Flying

Link trainers are going to sea again. Taken off most carriers which had them before or in early years of the war to obtain more space for wartime complements of men, the trainer has been installed on the *Saipan*, CVL-48, assigned to the operational development force.

It will be used especially to keep carrier pilots up on their night and instrument flying and to work out experimental problems. The trainer has been installed temporarily in the *Saipan's* crew's quarters at Philadelphia naval base, but it will be relocated in officers' area later. Before the war the Link was used mainly while the ship was at anchor, heavy seas making it impossible to control the crab on the tilting instructor's table.

THE RANGER'S TOUR IS ENDED

THE "HARPIES of the shore" are about to pluck another "eagle of the sea." The U.S.S. *Ranger* (CV-4), the first ship built from the keel up as an aircraft carrier of the U.S. Navy, is on her way to the scrap heap.

Christened in June 1934, the *Ranger*, sixth ship to bear the famous name, did her share to keep the name revered. Her planes led and covered the initial assault at Casablanca to open the second front in North Africa. She was the first American carrier to cross the Arctic Circle and the first to raid German shipping in Norway. Her record in number of aircraft landed aboard, 92,262, was surpassed only by the *Saratoga*, seven years her senior.

In October 1939 the *Ranger* was ordered on neutrality patrol in the Caribbean area, later extending her patrol from Bermuda to Dakar and the Azores. After Pearl Harbor the *Ranger* trained with her air group up and down the East coast, doing patrol work and spearheading the potential striking force in the Atlantic.

Ferrying P-40's and P-38's to Africa kept the carrier in dangerous waters during 1942 and 1943. The planes were brought to Accra on the African Gold Coast and then flown ashore by Army Air Force pilots.

At Casablanca the *Ranger* air group scored one 500-lb. and five 1000-lb. bomb hits on the battleship *Jean Bart*. Coast defense batteries at El Hank were strafed and neutralized during the landings. On the ground 21 light tanks and 86 trucks were immobilized. The cruiser

Primaguet, several destroyers and submarines also were strafed and bombed by her squadrons; the cruiser burned and sank. In the air her planes were credited with 16 certain kills and 5 probables; on the ground, 71 destroyed and 8 probably destroyed. Returning from the invasion, the *Ranger* out-manuevered a wolf-pack of submarines, narrowly avoiding torpedoes.

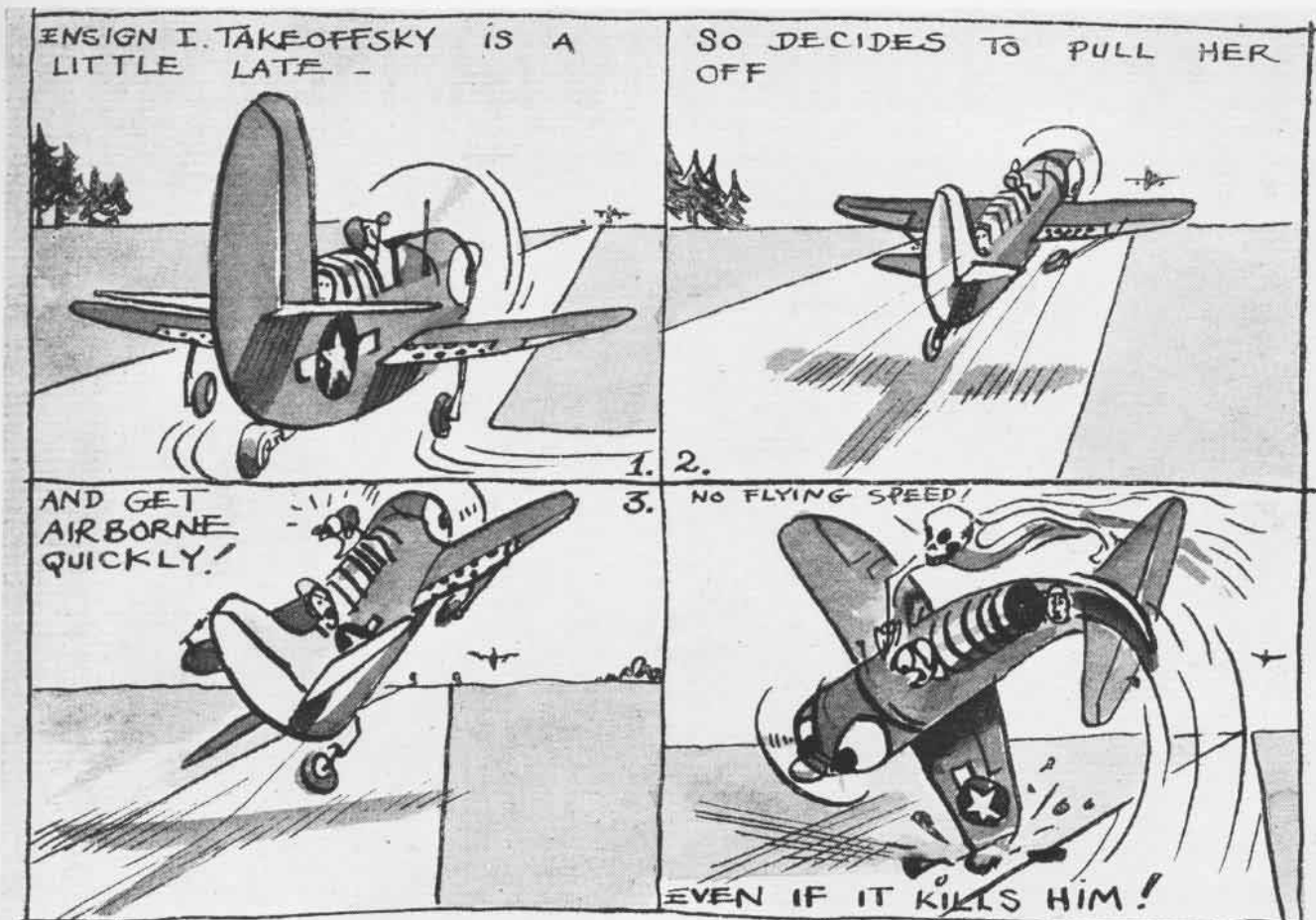
According to the Spanish language edition of the German magazine *Signal*, an officer was decorated by Hitler himself for sinking the American aircraft carrier *Ranger*. But six months later the *Ranger* made a daring raid into enemy waters near Bodo, Norway, destroying at least six vessels and shooting down a JU-88 and an HE-115, the only aircraft foolish enough to appear. For two more months the *Ranger* operated with the British Home Fleet and the RAF Coastal and Fighter Commands. German surface units did not leave port while this combination was stalking them.

With the Atlantic now well in hand, the *Ranger*, in June 1944, returned to the Pacific. She waited in Hawaii for further orders to combat—orders which never came. She trained squadrons for other carriers until October, then returning to the West coast to train squadrons for combat the rest of the war.

On 18 October 1946 the *Ranger* hauled down her flag for the last time. A set of colors and the commission pennant were presented to Harry A. Ferguson, CWT, USN, who put her in commission and was the only remaining "plank-owner" on the venerable ship.



THE RANGER WITH DESTROYER ESCORT AS SHE LOOKED TO HER PLANES DURING THE WAR



ENSEIGN TAKEOFFSKY

Moral: Don't Stall! Don't Stall! Don't STALL!



principle when the airplane is in its take-off climb. This oversight during the attempted take-off climb usually results in a STALL-SPIN accident.

An analysis of aircraft accident reports reveals some of the most common mistakes that lead up to these all-too-frequent stalls and spins during take-off:

1. *Pulling the plane off before attaining adequate air-speed.* Most of these accidents can be characterized by lack of attention and undue haste, by attempting to take-off with insufficient room, by losing directional control and pulling off, or by failing to utilize sufficient throttle early in the take-off run. The obvious precaution is to get a safe flying-speed before leaving the ground.
2. *Stalls during the take-off upon encountering slipstream of aircraft ahead.* Nearly all of these occurred during carrier take-offs, field carrier take-offs, and touch and go landing practices. Lack of proper regard for flight discipline is a common factor here, arising from nonstandard

take-off patterns and insufficient interval between planes. To avoid this type accident, irrespective of the pattern of the plane ahead, the plane behind should insure adequate interval and should see that he has sufficient air-speed with which to counter any unexpected turbulence.

3. *Abrupt climbs and steep turns* before adequate air-speed has been obtained. Abrupt climbs and steep turns are not only dangerous but unnecessary during the take-off. Get your flying speed first, then commence a gentle climb and turn if necessary. It's unspectacular but healthy.

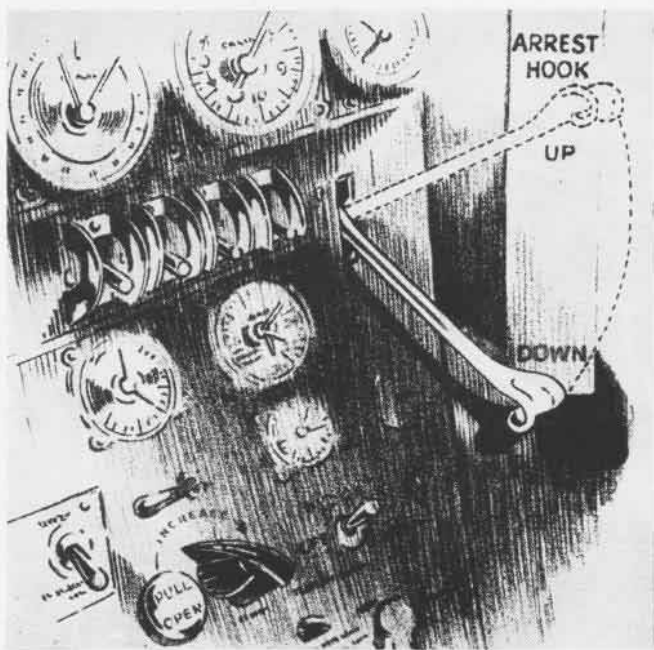
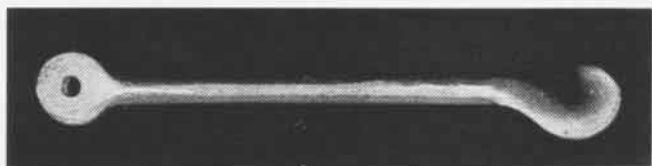
4. *Incorrect tab settings.* Upon investigation of take-off crashes, elevator tabs have been frequently found in the full-up position, indicating the pilot did not check his tabs. In other cases, investigation revealed other tab maladjustments, indicating either poor instruction or lack of attention resulting in the same unhappy termination. It is important to consider that tab settings on high performance aircraft can create forces greater than can be overpowered by the pilot. Even where the settings are only off a few degrees, the result can still be disastrous, particularly if the pilot should have his attention diverted during take-off under conditions of reduced visibility or if he is being catapulted.

5. *Incorrect tow target take-offs.* To protect the sleeve there is a natural desire to get up quickly. Evidence indicates that this is sometimes being overdone. Strict adherence to squadron tow doctrine is paramount.

6. Additional mistakes noted include retracting of flaps too soon, using insufficient R.P.M., and the failing to appreciate the aerodynamic effects of external wing tanks or other special gear.

Always remember that an airplane in its take-off climb needs airspeed to sustain it. Should you overlook this basic principle even for a moment, it may KILL you. Don't stall! Don't Stall! DON'T STALL!

COCKPITS TAILORED TO FIT THE AVIATOR



Busy hands and a busy brain welcome controls that look just like the part of the plane which they govern. You can't miss the hook

Simplified, Natural Controls on AD-1 Are Typical of Joint Research Goals

IF THE little wheel is down, the big wheels are down. Simple—isn't it? It looks like a wheel; it's shaped like a wheel; it goes up and down like a wheel. It's the cockpit control for landing gear, and there's no mistaking it for the gadget that moves the wing flaps. That gadget, in turn, looks like a cross-section in miniature of the wing flaps and moves in the same direction that the flaps do. Both visually and tactually it's a natural.

Then there is the arresting hook. Why not make the control lever look like the part to which it is connected? And so the miniature hook on the instrument panel, a replica of the real thing, practically shouts at the busy pilot—"this is it!"

Dive brakes are another item for which the control is being improved. The little lever, shaped like the brake itself, is readily identifiable. It controls the new fuselage brakes that open from below the cockpit and on both sides.

These common sense improvements in design of cockpit controls on the Douglas carrier-based dive-bomber AD-1 don't mean that you can come in for a perfect landing with your mind on leave, but they are a big step toward cutting through the labyrinthine confusion of the cockpit and making the pilot's job a little easier.

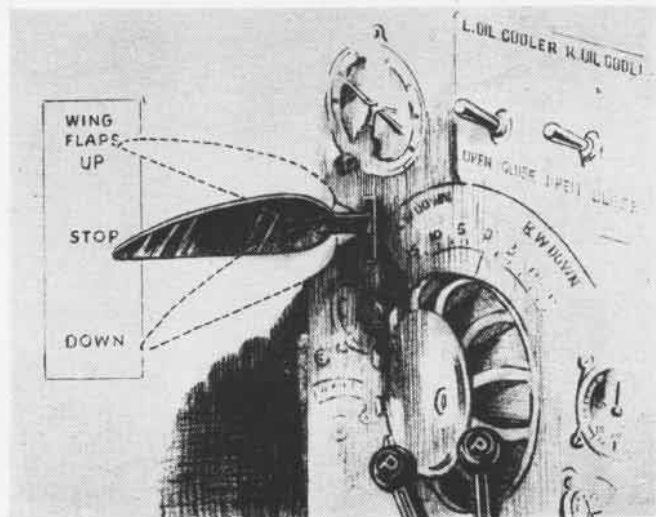
The ever-increasing complexity of the instrument panel—a natural outcome of constant additions to improve and

broaden the functions of combat aircraft—led to the research for means of simplification. Armament and electronic controls had augmented the problems of the pilot, and since science couldn't give him extra arms and another pair of eyes, it set to work on making it easier to pull the right lever with split-second accuracy.

The program of improving aircraft cockpit design is a splendid example of cooperative effort. Engineers, pilots, psychologists, physicians contribute their experience and best thinking. Navy, Army, manufacturers, and university research units join in experimentation. British aviation experts are collaborating also. From such a backlog of pooled ideas, BuAER, working with the Douglas El Segundo Engineering Division, tackled the specific problem of speeding up the pilot's reaction to the maze of handles, levers, buttons, and switches that he must manipulate. Three principles are involved in designing and placing the cockpit controls.

1. The control should, as much as possible, look like the part of the airplane to which it is connected.
2. The control should move in the same direction as the part.
3. The control should be placed as nearly as possible in a position in the cockpit corresponding to the position of the part it controls on the plane.

Instinctive operation of controls requires great familiarity with the location and type of movement of the equipment handled. A touch-typist can miss a key with only an erasure as penalty. The pilot who grabs the wrong lever and makes a wheels-up landing may not be able to try again. So while the improved designs on cockpit controls illustrated on this page aim toward instinctive, automatic manipulation, both sight and touch are aided to make quick, fool-proof selection possible. The landing gear control, for example, has even a plastic tire and a shock absorber strut to make it a perfect



Wing flap lever is shaped like a cross-section of the actual part and follows principle of control moving in same direction as flaps

imitation of the original. Definitely identifiable by sight or by "feel," its function is instantly recognized.

Position of the controls in the cockpit is determined by the location that you think of for the part being controlled. The little wheel is to one side directly over the wheel of the plane. The arresting hook control is placed low to the right. The flaps are half-way down the cockpit wall, paralleling the position of the actual flaps. Psychology says to do things the easy, natural way for best results. It's easier and quicker to feel the right-shaped lever in the place where you expect it to be than to read an identifying label in a haphazard arrangement of control positions.

Much study has gone into the matter of placing and designing instruments. Lettering and lighting have received attention. Fluorescent lighting instituted during the war for instrument panels eliminated much glare and, by darkening the cockpit, increased the pilot's night vision. Now the new indirect red light has gone beyond that. With indirect red lighting the pilot can look from his instrument panel into the night sky with practically no adjustment of the pupils.

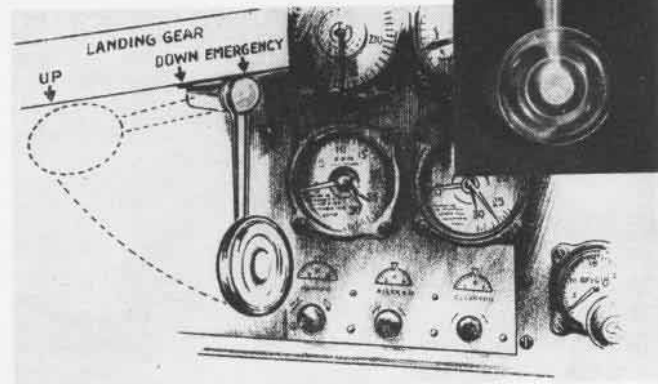
SSTREAMLINING combat aircraft in the quest for ever-greater speed involves the position of the pilot's windshield. The ideal windshield, aerodynamically, would be one that is parallel to the air stream. On the other hand, the ideal windshield from the point of view of the pilot who wants to see where he's going and what's headed his way would be one that is normal to the horizontal line of vision. The answer, of course, is compromise, and the new Douglas attack plane has the windshield set at an angle of 35° with the horizontal line of vision, since beyond that point the ratio of light transmission to windshield angle decreases at an accelerating rate.

Cockpit design studies have also been made on the distance between the pilot's eye and the windshield. It has been found that an increase in this distance very rapidly reduces the field of vision and aggravates interference of any dirt, fog, or other matter on the windshield.

Another improvement being incorporated on all X-models since last year is a single control for adjusting both rudder pedals simultaneously. The potential hazard of unequal adjustment through individual controls was traditionally built-in on all planes. Although British, German, and Japanese planes all used a single adjustment device, American aircraft lagged behind in this particular item.

No indicator is necessary with the improved rudder

Landing gear miniature wheel has even its plastic tire and a shock absorber strut to complete the resemblance to the real wheel—a fool-proof control



adjustment device; the pilot does it by "feel" and does it more quickly.

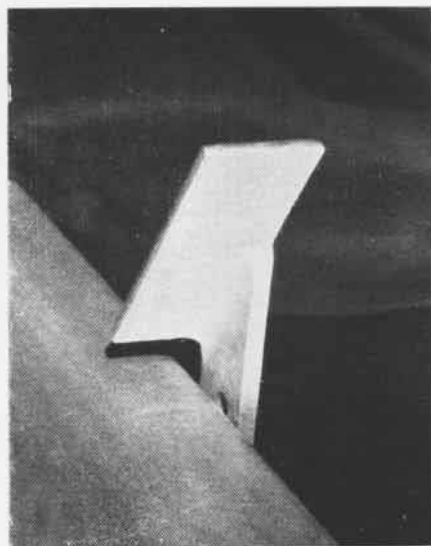
The color-scheme for cockpit interiors is getting attention too. Requirements that enter into this phase of design are night vision, minimum windshield glare from reflection, adequate cockpit illumination, maintenance conditions, and—in line with the trend toward more consideration for the man who has to sit in that cockpit for hours—the psychological effect on the pilot.

What the results will be in the way of a new simple color-scheme for the inside of the cockpit is not yet determined, but since psychologists have devoted so much study to the effects of color on man's mental and emotional well-being, it's only logical to apply their findings to the flyer.

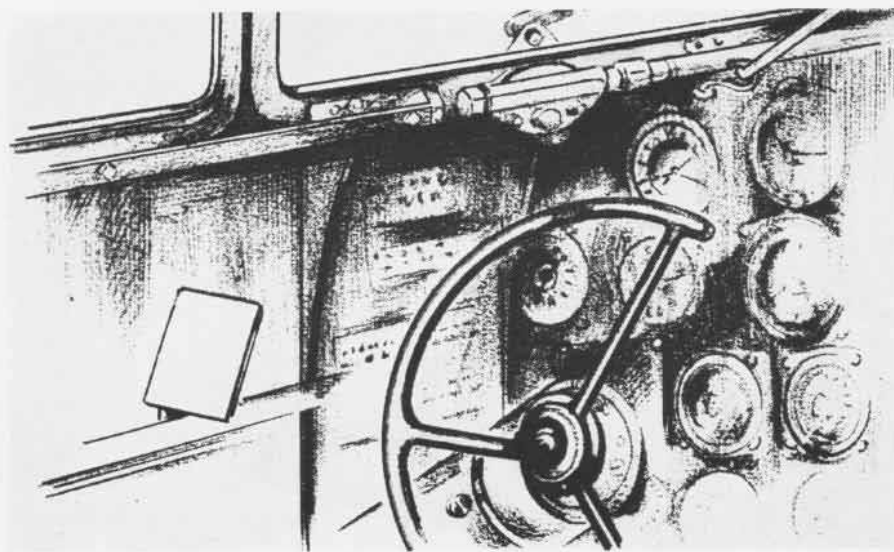
For the pilot who says, "I don't care about the color-scheme; just give me a comfortable seat"—there's encouraging work going on. (See NANews, June 1946, page 18.) An AAF report on aircraft seating, completed in June 1946, doesn't miss a measurement in giving complete, accurate data on the physical dimensions that must be considered for cockpit comfort. Boeing Aircraft Company has made a similar extensive investigation.

Developments thus far are only part of a long-range, cooperative plan to improve and standardize cockpits for both military and civilian flying. All the resources of science and experience, well blended with practical common sense, will continue to work toward a cockpit tailored to the man.

EASILY RECOGNIZED LEVER GOVERNS THE AD-1 FUSELAGE DIVE BRAKES THAT OPEN FROM BELOW THE COCKPIT AND ON BOTH SIDES



Restricted



Log of "Truculent Turtle" Flight Australia to United States

- Sept. 29—Pearce airdrome (RAAF field), Perth, Australia.
- 1000 (Perth local time, 0200 GCT time)—Began fueling.
- 1300—Loaded to 3,000 gal. Taxied out to end of runway 23 and spotted *Turtle* in take-off position to complete fueling.
- 1700—Completed fueling, 8,450 gallons on board. Weight 85,500 lbs.
- 1730—Started and sealed barographs. Royal Aero Club officiating and Lord Mayor Tatterstall witnessing. Accepted delivery on Joey, the female kangaroo, and covering papers from the Western Australia state. Mr. Hobson presenting, for the Washington, D.C., zone.
- 1800—Turned up. All hands on board. Comdr. T. D. Davies, USN, in pilot's seat; Comdr. E. P. Rankin, USN, in co-pilot's seat; Comdr. W. S. Reid, USN, at fuel dumping station, and Lt. Comdr. R. H. Tabeing, USN, at radio on flight deck.
- 1810—Began take-off. Wind from 240°, force 5-7 knots.
- 1811—Left ground. Wheels up. At about 3,500 feet on take-off run, reached 85 kts. and fired JATO. Reached 110 knots at 4,700 feet and left ground. Plane being pulled off slightly.
- 1818—Dropped JATO bottles over Indian ocean.
- 1822—Over Perth at 3,500 feet. Set course for Alice Springs.
- 1830—Leveled off at 5,500 feet.
- 1900—Climbed to 6,500 feet to avoid turbulence caused by desert air.
- 1605 GCT (29th)—Passed 20 miles to northwest of Alice Springs.
- 2015 GCT—Passed 32 miles SE of Cooktown. Took departure for Milne Bay, New Guinea. Altitude 7,000 ft. distance 2,190 st. miles. Sunrise.
- 2318 GCT—Over Milne Bay. Took departure for Buka, Bougainville. Altitude 7,500. Cumulative distance 2,740 st. miles.
- 0005 GCT (30th)—Heavy weather over Bougainville and New Britain. Changed course to pass south of Bougainville and through Bougainville strait Climbing to 10,000 ft.
- 0050 GCT (30th)—Over Shortland Island taking departure for Wotje. Altitude 10,500. Distance 3,160 st. miles.
- 0632 GCT—Sighted Jaluit atoll. Passed 60 miles N.W. Altitude 11,000. Distance 4,500 st. miles.
- 0739 GCT—Over Wotje atoll. Departing for Maro reef (Hawaiian chain). Altitude 12,000. Distance 4,720 st. miles.
- 1700 GCT—Radio contact with Radio Honolulu. Altitude 12,500 ft. Distance 7,400 st. miles.
- 0630 GCT (1st)—Radio contact with Oakland radio. Altitude 13,000 ft.
- 0743 GCT—Passed over coast of U.S. at Pt. Cabrillo, Calif. Altitude 13,000 ft. Distance 9,350 st. miles.
- 0820 GCT—Over Williams radio range, joined airways traffic, proceeding eastward at 12,000 ft.
- Over Ogden Utah, Altitude 12,000. Distance 10,000 st. miles.
- Over Omaha, Altitude 12,000. Distance 10,850 st. miles.
- Over Peoria, Ill. Altitude 12,000 ft. Distance 11,150 st. miles.
- 1829 GCT (1st)—Landed at Columbus, Ohio. Dist. 11,235 st. miles. Elapsed time 55 hours, 16 minutes.

NAS NEW ORLEANS—Plans are under way to convert a barracks on the station into an enlisted men's apartment house of 16 two-bedroom family units, with community laundry facilities. The second deck of the B.O.Q. would be converted to three apartments for married officers and their families.

NAS TILLAMOOK—A plane attached to the station spotted a forest fire about 10 miles south of base and reported the fact to the control tower. The information was relayed to the Oregon State Forestry Service and the fire was promptly extinguished.

PUBLIC VIEWS RADAR-GUIDED BAT



BAT BEING RELEASED BY HELLDIVER IS ON ITS OWN AFTER BEING SET UP BY OPERATOR.

LONG a closely guarded secret, the Navy's deadly BAT received its first public showing recently in a special show given for members of the press at NAOTS Chincoteague, Va. The flying bomb was the first fully automatic guided missile to be used in combat by any nation.

Privateer pilots and aircrewmembers made a "live" drop to show the potentialities of the missile which took a heavy toll of Jap shipping. Two patrol squadrons are now training at Chincoteague for service use of the BAT.

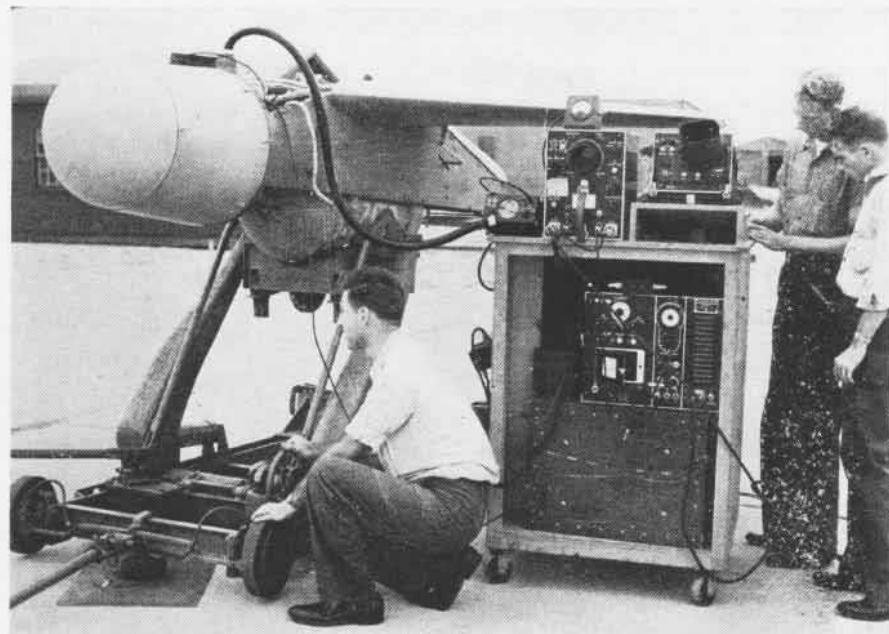
Also effective against land targets such as bridges and dams, the BAT can be launched from fighters as well as large patrol planes. The complete unit

is approximately 12 feet long and has a 10-foot wingspan.

The BAT homes unerringly on a target by means of radar and carries a 1000 lb. bomb load. Mounted on a glider-type airframe, the flying bomb has a range of more than 10 miles, thus keeping the mother plane out of long-range flak. A servo system moves the weapon's control surfaces to keep it on target.

Highly accurate in all types of weather, the BAT's radar homing gear is set up on a remote control panel in the mother plane. When on target, the gear is switched to automatic tracking and the missile sent on its flight of destruction, guided by self-contained radar.

FLYING BOMBS WERE EVALUATED IN COMBAT ZONES BY SPECIALLY-TRAINED BUORD TEAMS



TECHNICALLY SPEAKING



POWERFUL APPROACH LIGHTS PERMIT BLIND LANDINGS AT EXPERIMENT STATION, ARCATA

High-Intensity Lighting Tested

THE LANDING Aids Experiment Station at Arcata, California, originally developed as a Navy project, is now being operated by United Air Lines under contract with the Navy. A steering committee of Army, Navy, and CAA officials determines research policies and has general supervision of the program.

In addition to an extensive installation of burner systems for fog dispersal (See FIDO, NANEWS, Feb. 1946), the station is experimenting with fog clearance by ultra-sonic equipment and has set up a high-intensity lighting system, both runway and approach.

The runways are wired to accommodate three different systems of lights for testing and comparison. Completed so far are the standard ANC semi-flush installation and the Bartow high-intensity lighting system similar to that used in the Aleutian areas.

Approach lighting, covering a distance of 3500 feet from the threshold of the runway, consists of an Army installation of 5000-watt lights manufactured by the American Gas Accumulator Company. Since the terrain drops off considerably on the approach south

of the airfield, some of the lights are mounted on towers as high as 85 feet to bring them to runway level. This ap-

proach lighting installation has recently been completed and will be exhaustively tested under the ceiling zero conditions often created by Arcata fog.

The Arcata station also has recently received GCA equipment in addition to its SCS-51 installation.

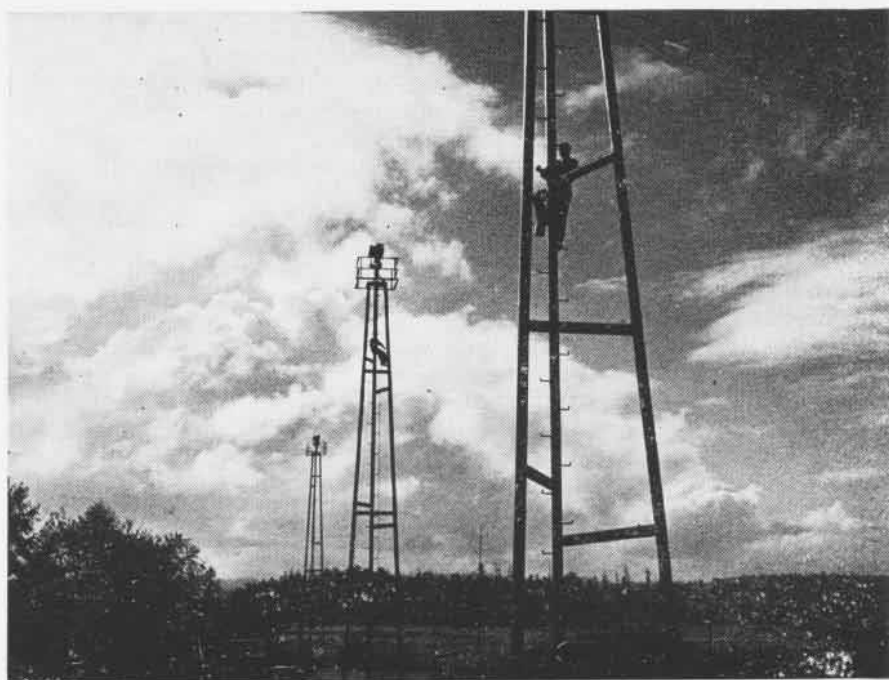
Log Books Belong With Engines

BuAer continues to receive RUDM's which state "the log book did not accompany the engine" or "log book not received with engine," or words to that effect.

Investigation and comment can always be made even on incomplete data, but the *value* of such investigation and comment will depend entirely on the data available. To make a safe diagnosis of a sickness the doctor obtains a history of his patient's troubles. Similarly a proper analysis of service troubles can be made only when historical details are provided.

The properly kept engine log book provides these details, and a concerted effort should be made to insure transfer of log books with engines. BuAer Manual, Article 27-103, and Part 1 of all log books make the following statement: "The log book shall accompany the engine and shall be transferred with the engine, preferably in or attached to the engine box." It tells the story.

OVER LOW TERRAIN APPROACH LIGHTS ARE SET UP ON TOWERS TO REACH RUNWAY LEVEL



Norfolk Saves Money on Boxes

NAS NORFOLK—To offset the acute shortage of lumber, the Supply Department has come up with a good idea that saves \$1,800 a month and helps solve its own shipping problems.

The idea was started during the war but is proving even more valuable during the peacetime lumber shortage. Daily contact is maintained by the division with all storehouses, a truck being sent to pick up all boxes and crates in which incoming stores and supplies have been received but which have been emptied for bin storage.

They are taken to the division platform and those which need reconditioning are fixed up with salvaged scrap lumber by the packers. An electric saw is employed in the reconditioning process.

Tonnage of material shipped from the station requires about 1500 tons of boxing and crating a month, with approximately 45% of this going out in salvaged containers.



SPARE BOXES PILED READY FOR REUSING

Lifeboat Cover Is Insufficient

VP-53—Recent inspection of AR-8 lifeboats used by this squadron indicate that they must be kept under some protection in addition to the canvas cover provided while being stowed.

Water was found in all the bilges and compartments aft of the fuel tanks ruining much of the gear. Bilge and compartment access covers had corroded badly making it difficult to open them.

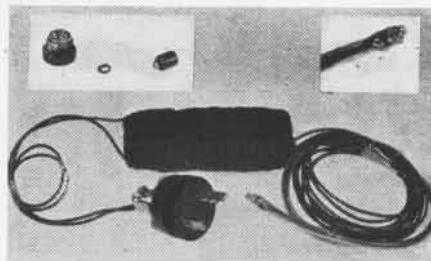
To remedy this situation it was recommended that all boats be kept under some sort of shelter. If no housing is available, a peaked frame should be built to prevent water from collecting in the sag of the canvas.

All bilge and compartment openings must be sealed with some kind of non-hardening semi-solid material such as beeswax. Hand bilge pumps should be provided as standard boat equipment.

Frequent inspections will guarantee that all compartments are accessible, gear is in good shape and motor is in running order.

► **BuAer Comment**—The use of waterproof tape will be more effective for sealing hatches in place of beeswax.

Hand bilge pumps are called for in the AR-8 contract and should be supplied with each boat.



PROBE LIGHT UTILIZES INSTRUMENT BULB

Small Light Probes Radio Gear

NAS ALAMEDA—The electronics Division of A&R has developed a Light Probe which is very handy in the servicing and repair of electronic equipment.

The probe utilizes a three volt 0.19 Amp. Kollsman instrument bulb of the type employed in compasses. A resistance of approximately 120 ohms reduces the 28-volt supply to three volts. Three feet or more of small gauge flexible wires are soldered to the bulb and covered with plastic tubing.

► **BuAer Comment**—This is obviously a good idea. It is suggested that lamp AN3140-327 or AN3140-328 be used. The bulbs are a little larger but are cheaper and handier to use. The AN3140-327 is a 28 volt lamp which would require no resistor. The-328 is a 6 volt lamp taking 0.2 amperes. Four penlight cells could be wired in series to make a battery, thus providing a completely portable light.

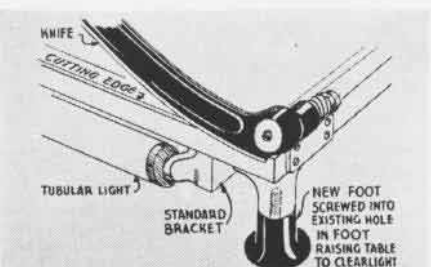
[DEVELOPED BY G. E. MOORE, *Radio Mech. Mag.*]

Light Speeds Negative Trimming

VJ-7—The Photo Lab of this San Diego squadron has designed and put into use a photo trimmer that has become very useful in trimming large size negative photostats.

It consists merely of a standard photo trimmer with a fluorescent light tube installed beneath the cutting edge. Light passing through the print paper silhouettes exactly where the blade will cut.

In the past it was necessary to cut the corners of all large prints before attempting to trim them accurately. This new system eliminates that entire operation and is far more accurate.



ALL NECESSARY ELECTRICAL ACCESSORIES AND WIRING ARE INSTALLED UNDER TRIMMING TABLE.

Wheels-Up Landing Unnecessary

UTILITY WINGS PACIFIC FLEET—A ruptured hydraulic line which sprayed him generously with fluid, lowering weather which was closing his home base and nearly empty fuel tanks recently caused a pilot of this command to make a needless wheels-up landing.

All known emergency procedures including the emergency hand release for getting the wheels unlocked and down were attempted without success. Proper emergency hand pump procedures succeeded in dropping the tailwheel but the main gear remained fully retracted.

Investigation showed that a large amount of hydraulic fluid remained below the standpipe in the hydraulic reservoir and that, while executing his emergency procedure, the pilot had taken only about 20 or 25 partial strokes on the hand pump—he was a short pilot. Noting that no back pressure was building up, he had given up.

► **BuAer Comment**—Pilot should never give up until at least 100 strokes are made.

Gasoline Vapor Blasts Corsair

VF-4—Corsair pilots interested in safety can profit from the experience this squadron had with a gasoline fume explosion in the cockpit when an ordnanceman turned on the firing switch.

The plane was being tested for malfunctioning of firing circuits and had been run an hour previously. Also, the cockpit had been cleaned with a mixture of diesel oil and gasoline the same day.

When the ordnanceman closed the switch the explosion blew him right out of the F4U-4 and ripped up the starboard side of the plane. Exact cause of the ignition of vapor is unknown but it is believed the vapor accumulated from a leakage of gasoline from the defueling valve.

Investigation showed the gasoline leaked around the rotor stem past the two synthetic rubber seals because of vibration. Simulated vibration by rapid movement of the rotor stem by hand caused gasoline to well up around the stem into the bilge of the plane. All defueling valves of squadron planes were tested and 50% found defective.

A test of the defueling valve was made and results showed that addition of one more synthetic rubber seal on the rotor stem stopped leakage. All valves were corrected. The order prohibiting use of gasoline at any time as a cleaning agent was again emphasized to all hands.

► **BuAer Comment**—Explosion was due, of course, to sparking switch contact with gas vapor, but it is impracticable to install explosion-proof fixtures for all sparking contacts in even the smallest airplane. Relays, switches, d.c. motors, starters, etc., all spark when actuated and there are too many to permit making explosion proof. Weight factor alone would be prohibitive.

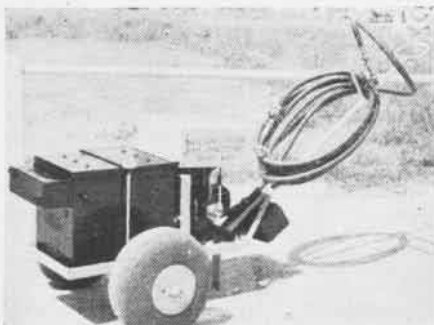
Data Request Form Proves Worth

NAS JACKSONVILLE—The A&R Department uses a form known as an R.E.I. (Request for Engineering Information) for transmitting engineering data from that division to the production divisions.

Shops desiring technical data or engineering advice originate the R.E.I. by filling out the top half of the red-bordered form. The Engineering division investigates the problem and writes the answer in the lower half of the mimeographed form.

The extent to which the form is used can be seen from the fact 1,175 R.E.I.'s were issued during 1944 and 2,224 in 1945. Instructions were given on methods of repair, manufacture, material substitutions, minor changes, allowable tolerances of parts and many other subjects.

They are automatically cancelled one month from date of issue. If the subject of an R.E.I. is of a permanent nature, a local engineering bulletin or specification is written before it expires to provide permanent instruction.



PORTABLE UNIT RECHARGES AIR BOTTLES

Atlanta Fabricates Compressor

NAS ATLANTA—Forced to automatically ground planes having to use compressed air bottles in emergency landing gear operation due to the unavailability of recharging equipment, this activity fabricated its own compression unit.

A small three-stage air compressor operated on 24 volts DC was obtained from surplus stocks of the Army Air Forces at a nearby field. Ordinary seamless aluminum tubing and fittings were used, and the whole system placed on a small cart.

The unit was made compact with a standard aircraft booster battery connection so that a portable booster may be plugged in. This outfit will pump up to 1800 PSI in from 20 to 30 minutes.

BuAer Comment—The Bureau is familiar with this compressor. It was used on B-29 Bombers to operate the bomb-bay doors. There is no doubt as to its usefulness and its only fault is the fact that it has a small CFM.

The Bureau has two types of compressors on allowance lists capable of producing

high pressure. The R66-C-1460-60 is a 3-stage, 15 CFM, 150 to 2000 PSI unit and the R11-P-100 Booster pump is also capable of producing high pressure air.

The Bureau has no objection to using the small 24V 3-stage compressor if they can be obtained through surplus from the AAF.

Emergency Controlled Let-Down

MCAS CHERRY POINT—The First Marine Air Warning Group, Second Marine Air Wing, has devised an emergency controlled instrument let-down system for use where normal Ground Controlled Approach equipment is not available or is inoperative.

The standard equipment of a Marine Air Warning Squadron is used. This consists of AN/TPS 1B and SP-1M radars plus VHF radio. Like GCA, the pilot needs only to call the ground station, request a controlled let-down, and obey.

The Air Warning Squadron picks the plane up on its search radars and directs it to a holding point until the field and approachers are clear for landing. Where practicable, the plane is orbited in the clear.

When the field is clear, the controller vectors the pilot to a point approximately ten miles from the field where a straightaway approach at 1000 feet altitude is commenced.

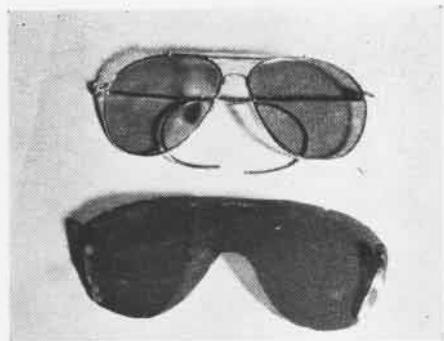
At about this distance, the controller shifts his attention from the remote VE scope which gives him the search picture to the PPI scope of the SP-1M radar. On the PPI scope of the SP-1M he can see the outline of the service runway, highlighted by outlining it with a grease pencil. On this same scope he can see the blip of the approaching plane.

When the pilot is steady on heading into base he is told, "Wheels down. Speed 120." After this is accomplished, the pilot is instructed to begin a normal let-down at 500 feet per minute.

The pilot is guided directly over the downwind end of the service runway until he breaks out in the clear or until the minimum safe altitude is reached. In the latter case a "direct wave-off" is given, and the plane is sent to an orbit point to await better weather or is instructed to land at an alternate field.

Five hundred feet is considered the minimum safe altitude at Cherry Point. If the pilot does not break out in the clear at this altitude he is directed to an alternate airport. Tests run locally have indicated that planes can be tracked accurately to the edge of the field and as low as 100 feet, but this is not considered advisable except in a case of extreme emergency.

The method described is not a substitute for GCA, but it is a valuable aid to pilots when GCA is lacking.



CLIPS ATTACH COLORED LENS TO GOGGLES

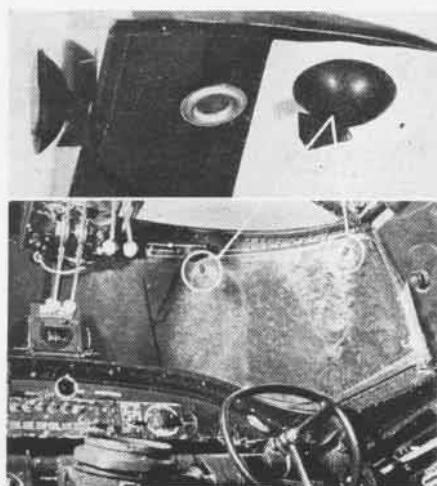
Use Of Blind Flying Equipment

VP-91—Simulated blind flying equipment for training in instrument flight as used by PBS-91 consists of green Lumarith sheets covering windshield and cockpit enclosure windows, used in conjunction with red lens goggles. This squadron found that the green Lumarith sheets, R93-F-293-100 (Device No. 1-F-2) could be attached more satisfactorily by the use of 1 1/2" rubber suction cups (see cut, top) than by simulated blind flying clips which have a tendency to rust and tear the sheets. The suction cups are inserted through No. 4 brass grommets secured to the green sheets at predetermined positions. The grommets eliminate tearing of the green sheets.

Goggle assembly kit, R37-G-3535, was found to be unsatisfactory because of condensation on the lens after a short period of use. By removing red lens from rubber goggle frame and attaching two stainless steel clips to the lens, it can be fastened to any Navy standard type sun glasses.

CNO Comment—The color combination of green sheets and red goggles has been replaced in most squadrons by a color combination of amber sheets and blue goggles. This latter combination has been generally accepted as the better. Blind flying kits are available at Special Devices section of ORI.

[DESIGNED BY ALBERT C. REVELS]



LUMARITH SHEETS HELD BY SUCTION CUPS



SUPPLY NEWS

FROM ASO AND SUPPLY DIVISION BUAER

Clarification for Section 8802

The following will clarify the superseding information appearing on the cover page of Section 8802 of the ASO Catalog.

Section 8803, Supplement -2, issued May 1946, supersedes pages 19 and 20 of Section 8802, Supplement -1, issued June 1945. Pages 19 and 20 of Section 8802 should be crossed out and notation made on the sheets that they have been superseded by Section 8803 of May 1946.

Section 8803, Supplement -2, also supersedes pages 70 to 82 inclusive of Section 8801 (Instruments) issued January 1945. These pages should be canceled and notation made of the supersedure.

A complete cross reference index is provided by Section 8803, Supplement -2, set up in two methods: 1. Manufacturer's Part Number to ASO Stock Number, 2. ASO Stock Number to Manufacturer's Part Number. This section supersedes the "Indexes of Manufacturer's Part Numbers" only, which are included in Sections 8801 and 8802.

Sections 8801, issued January 1945, and 8802, issued June 1945, are to be retained in the ASO Catalog until they have been superseded completely and revised.

Class 10 Material Transferred

Cognizance of Class 10 material (outboard motors and accessories) has been transferred from BUAER to BuShips. Therefore all ASO Catalog holders should insert the following notation on the cover sheet of Section 1001 (preliminary edition issued February 1944): "This material is not available through Aviation Supply sources. Requisitions for this equipment from aeronautical activities shall be forwarded to the Bureau of Aeronautics for review and transmittal to Bureau of Ships for action."

Until the Bureau of Ships Section of Catalog of Navy Material can incorporate this equipment in their section of the Catalog, Section 1001 should remain a part of the ASO Catalog.

ASO Catalog Section Index 0001

The new Section Index No. 0001, second edition dated August 1946, which supersedes the first edition of December 1945, has been distributed to all ASO Catalog holders. The publication is set up in two methods: 1. numerically by class and section sequence within each class; 2. alphabetically by noun-name nomenclature. It should be inserted in the front of the ASO Catalog and used for quick reference.

This Section Index should be used as a check-off list with each Catalog carefully checked against the new section. Catalog sections found to be missing may be re-

quested directly from the Officer-in-Charge, Catalog Group, Aviation Supply Office, Oxford Ave. & Martin's Mill Road, Philadelphia 11, Pa.

Change in Catalog, Section 8301

The Application Table of Section 8301, page 2, under Utility Transports, lists JMB-1, -2, -3, -4 aircraft as using a tire item No. 54. This is incorrect and should be changed as follows:

JMB-1 and -2 aircraft only are equipped with item No. 54, which is a 29" 13-5, 6 ply tire. Stock No. 1883-T-5095. JMB-3 and -4 aircraft are equipped with item No. 12, which is a 33", 8 ply tire, Stock No. 1883-T-7034. All ASO Catalog holders should make this change, pending revision of the section.

Correction Made in Section 8810

The supersedure notice on the cover page of Section 8810, issued April 1946 should read as follows:

"Section G of this Section supersedes Section F of the First Edition of Section 8801 (Instruments) issued January 1945. It also supersedes page 15 only of Supplement 1, Section 8802, issued June 1945."

Aircraft Clocks Are Loose Gear

According to BUAER Technical Order No. 33-46 of 3 October 1946, all aircraft clocks are to be given the status of loose gear. This will provide for the removal and storage of the clocks while aircraft are in storage or being overhauled. The pilfer-proof installation formerly specified in T. O. No. 69-45 will be modified and the normal method of clock installation used.

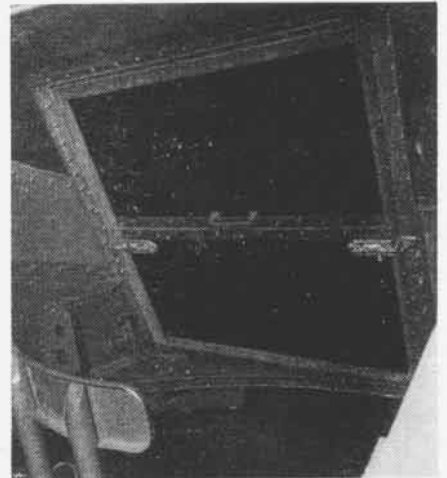
To accomplish this modification it will be necessary to drill out the flush mounting screws specified for the pilfer-proof installation. Care should be taken to drill dead center in order to prevent damage to the instrument panel. The clock can then be removed from the panel and the screws remaining in the clock can be backed out with a pair of pliers. Standard instrument mounting screws are to be used when installing the clock. Manufacturers will use normal method of clock installation in production aircraft.

Modified TBM Does Catalina Job

VJ-4-A shortage of PBV-5A aircraft in this unit has provoked the modification of a TBM-3J for use as a photographic plane. Photo hatches installed in the canopy of the TBM's turret compartment open into the plane thus

avoiding the slipstream. A bombardier's swivel seat used in PBV airplanes has been placed in the *Avenger* to seat the photographer and a brace has been installed for resting his feet. Port or starboard side is available for taking pictures through use of the swivel chair.

Two restrictions keep the TBM from actually replacing a PBV and becoming an ideal photo plane: Restricted visibility forward due to mid-wing location, and less time on station than the *Catalina* affords. Despite the two disadvantages, the TBM can accomplish most photographic work called upon to do.



PBV SEAT INSTALLED IN TBM GUN TURRET

Fighting Engine Fires In Flight

Open engine cowl flaps are part of the engine fire extinguishing procedure on R4D, R5D, and R5C aircraft. During recent months BUAER has received several AAR's and RUDM's pertaining to engine fires during flight on these planes. Some of these reports stated that the engine cowl flaps were closed prior to and during the discharge of the fire extinguisher. BUAER Technical Note #86-44 of 23 September 1944 specifies open cowl flaps. Army pilot's handbooks on these aircraft are being revised to require that cowl flaps be open while extinguishing engine fires.

Resistor For Position Indicator

Reports have been received on inability to obtain a fixed resistor from stock for use with position indicator, ASO stock number 188-1-1884-745. This fixed resistor is attached externally to the case of the position indicator and both are procured as a unit for use in the JRB/SNB type aircraft.

Due to the low initial cost of the unit (indicator and resistor) no stock of replacements parts has been available. However the fixed resistor is now available as stock number 188-SW-106464 and may be obtained through normal supply channels of the Navy.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Line Maintenance of Ordnance Equipment

To insure that aviation ordnance equipment can be kept in operating condition during the service tour of the aircraft in which installed, BuOrd furnishes to all fleet and field activities line maintenance instructions as a part of the basic ordnance pamphlet (OP) for each type of equipment supplied.

In addition, sufficient spare parts and assemblies are furnished, usually in the form of a set, to enable AOM's or AFC's to accomplish any minor repairs or adjustments listed in the line maintenance procedure. Should special tools or supplies such as bombsight oil or extra fine emery cloth, not available in general or aviation stores, be needed in carrying out line maintenance procedures, these too are furnished as a part of the set.

Line maintenance sets are a portion of the allowance of maintenance accessories for use by aircraft tending activities and may be obtained by field and fleet units in accordance with the instructions contained in NavOrd OCL V5-46. A complete list of all parts contained in these sets is included in NavOrd List 21416 (Rev. "A"). It is desired to place in these sets the material and equipment necessary to perform line maintenance, but to omit such tools and spare parts as are needed for work which the Bureau desires to be performed only by overhaul activities.

If the spare parts and assemblies contained in the line maintenance sets are not considered adequate to cover normal line maintenance requirements, Bureau of Ordnance should be informed by means of a RUDAOE, forwarded through appropriate channels, in which should be described the operation to be performed and information to substantiate the reasons for making this operation part of the line maintenance. Upon receipt of the RUDAOE, this Bureau will initiate prompt investigation and will take such steps as will make the set best meet the needs of all activities.

The publications listed below, relating to aviation ordnance equipment now in general use, include line maintenance instructions and may be obtained from ordnance publication centers upon submission of NavOrd Form 1 (Rev. 8/45):

Equipment	Line Maintenance Publications
Illuminated Sight, Mk 8	OP 803
Illuminated Sight, Mk 9	OP 863
Bombsight, Mk 23	OP 1216
Gunsight, Mk 18	OP 1043
Gunsight, Mk 23	OP 1316 (Preliminary)
Gun 20mm, M3	OP 1317 (Preliminary)
Gun .50 Caliber	War Dept. TM 9-1225
Boresight Kit, Mk 1	OP 985

Publications for aviation ordnance equipment not listed here in which the line maintenance instructions are inadequate, are in the process of being revised. All forthcoming OP's concerning the operation and maintenance of new aviation ord-

nance equipment will contain line maintenance instructions under an appropriate heading.

Modes of Illuminated Sights Reduced

In order to provide more efficient service, simplify fleet Allowance Lists and Requisitions and to reduce attendant confusion, the several Illuminated Sights Mk 8 now in service will be reduced from 22 different stock numbers to 3 by a forthcoming Bureau of Ordnance Circular Letter. Henceforth supply activities will furnish only the following:

STOCK NUMBER	NOMENCLATURE
2-S-3114-55	Illuminated Sight
2-S-3114-90	Illuminated Sight
2-S-3114-125	Illuminated Sight with Adjustable Reflector Mk 4 Mod 0

MK MOD REQUIRED FOR

8 6	VF Aircraft where windshield is used as reflector.
8 8	Aircraft where windshield cannot be used as reflector. Patrol aircraft having fixed forward guns and rocket provisions.
8 8	

This change will greatly simplify ordering and supply of Mk 8 Illuminated Sights. Disposition instructions and further instructions for handling will be provided by the new Circular Letter. However, these instructions are not to be interpreted as permitting retroactive changes to sights now installed.

BuOrd Tests Performance of .50 Cal.

To determine rates of fire of the .50 cal. BAM gun, M3, in the turret and wing gun installations and to determine the best possible mounting arrangement for this gun, a series of tests recently have been completed.

An Emerson 250 SE-1 turret was employed for the turret tests with the following gun installation combinations:

1. The .50 cal. gun, M2 mounted on the AN-E-10 Adapter.
2. The .50 cal. gun, M3 mounted on the T25E1 Adapter.
3. The .50 cal. gun, M3 mounted on the T25E1 Adapter after replacing the T25E3 muzzle booster with the Mk 3 cyclic rate control.

An M3 Gun was mounted in the port mid-gun position of an F4U-4 airplane with the following gun installation combinations:

1. On the Mk 4 Mod 0 mount.
2. On the T25E1 adapter mount.
3. On the T25E1 adapter mount after replacing the T25E3 muzzle booster with the Mk 3-0 cyclic rate control.

Results of these tests were as follows:

1. That in the turret (Emerson 250 SE-1) installation:

- a. The .50 cal. gun, M2, on the AN-E-10 adapter fired an average of 664 rounds per minute.
- b. The M3 on the T25E1 adapter fired an average of 1,000 rounds per minute.
- c. The M3 on the T25E1 adapter with the Mk 3 Mod 0 cyclic rate control fired an average of 1,164 rounds per minute.

2. That in the port mid-gun position of the F4U-4 airplane wing installation:

- a. The M3 on the Mk 4 Mod 0 mount fired an average of 1,020 rounds per minute.
- b. The M3 on the T25E1 adapter fired an average of 1,175 rounds per minute.
- c. The M3 on the T25E1 adapter and with the Mk 3 Mod 0 cyclic rate control fired an average of 1,382 rounds per minute.

Throughout the tests no deleterious effects on the aircraft structure because of incorporation of the T25E1 adapter and/or Mk 3 cyclic rate control were experienced, consequently, the combination of the M3 machine gun, the T25E1 gun mount adapter, and the Mk 3 Mod 0 cyclic rate control is considered satisfactory and desirable for use in fixed and flexible gun installations in naval aircraft.

The T25E1 gun mount adapter is similar to the AN-E-10 adapter except that it incorporates a heavier ring spring. It was designed to absorb a portion of the recoil load of the M3 thereby preventing excessive flexure of the supporting aircraft structure.

The Mk 3 Mod 0 cyclic rate control is similar to the T25E3 muzzle booster on the M3 Gun, except that it has a smaller venturi orifice and produces higher muzzle pressures which result in faster gun operation.

Special mounts were constructed for the installation of the T25E1 adapter in the port mid-gun position of the F4U-4 airplane. It is believed that the current front and rear mounts must be redesigned if the T25E1 adapter is to be satisfactorily employed.

BuOrd Suspends Use of Some JATO Units

Interested using and stocking activities have been notified by Bureau of Ordnance dispatch 221801 October to suspend issue and use of all SAS 1000 JATO UNITS and all one-piece 12AS 1000 JATO UNITS. The 12AS 1000 units involved have the letter modification A, C, G, or D2 stencilled after model designation number.

The two-piece 12AS 1000 units, which are not affected by this suspension, may be readily identified by the threaded junction of the two sections at the forward end of the unit. Additional information will be disseminated upon completion of tests currently in progress.

NAS SAN DIEGO—The station has received five fire trucks of a new type to combat aircraft fires. These vehicles are chemical foam trucks which can discharge fire-quenching foam from booms at a considerable distance from the blaze. In addition, they also have fog nozzles for use when that type of spray is best suited.

OCTOBER SUPPLEMENT TO

NAVAL AERONAUTIC PUBLICATIONS

INDEX

AVIATION CIRCULAR LETTERS

Title	Order No.
§Airborne Electronic Equipment and Test Equipment; Installations, Overhaul and Maintenance of.	A.C.L. 140-46
§XAD-1W and AD-1W Aircraft Model Designations, establishment of.	A.C.L. 142-46
§Aircraft Engine Reporting and Record System—Revision of.	A.C.L. 143-46
§Handbooks, Manuals, Catalogs, Specifications, and Equipment—Revised Classification of.	A.C.L. 144-46
§Aircraft Engines Awaiting Overhaul—Disposition of.	A.C.L. 145-46
§HO3S-1 Aircraft Model Designation; establishment of.	A.C.L. 146-46
§Instrument Flight Standards and Qualifications of Pilots within the Aeronautical Organization—Comments on the Status of.	A.C.L. 147-46
§XF9F-2, Aircraft Model Designation; establishment of. (Conf.)	A.C.L. 148-46
§Ground Controlled Approach (GCA) Units.	A.C.L. 149-46
§Army-Navy Uniform Requirements for Lighting of Taxiways.	A.C.L. 150-46
§Military Instrument Flying Qualifications and Instrument Flight Clearances—Supplementary/Concerning.	A.C.L. 151-46

TECHNICAL NOTES

§Airplane Tow Bars.	T.N. 23-46
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TECHNICAL ORDERS

Cancelled: 91-44, 66-45, 69-45.	
§Service Record of Accessories—Extension of Re-Lubrication; Interval on.	T.O. 32-46
§Aircraft Clocks—Mounting of.	T.O. 33-46
§Ground/Air Emergency Code.	T.O. 34-46
§Water Injection Fluid, Use of	T.O. 35-46

GENERAL

Gadget Digest Illustrated Manual of Special Devices, Revised July 21, 1946.	AN 00-55-2
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ACCESSORIES

General

Airframe Accessory Bulletins:	
Cancelled: 4-46	
§Landing Gear—Goodyear Brake Discs—Straightening and Repair of, Sept. 26, 1946.	20-46
§Miscellaneous Accessories, i-6 Supplement No. 1 Aeroquip Hose Assemblies; Low, Medium and Medium High Pressure Using AN773, AN792, AN793, AN794—Detachable End Fittings—Instructions, for Sept. 20, 1946.	21-46
§Miscellaneous Accessories, i-5 Supplement No. 1. Weatherhead Hose Assemblies; Low, Medium and Medium High Pressure Using AN773, AN787, AN788, and AN789 Detachable End Fittings—Instructions for, Sept. 20, 1946.	22-46
§Hose Clamp AN748—Information Regarding, Oct. 4, 1946.	23-46

COILS, BOOSTER

Operation, Service and Overhaul Instructions with Parts Catalog for Eclipse 512, 513, 1313, 1367 and 1497 High Tension Coils, Revised Sept. 15, 1946.	AN 03-5-79
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HYDRAULIC SYSTEM

Pumps

§Operation and Service Instructions for Hydraulic Oil Pump Romeo RD-4950, Aug. 2, 1946.	AN 03-30CQ-4
§Overhaul Instructions for Hydraulic Oil Pump Romeo RD-4950, Aug. 5, 1946.	AN 03-30CQ-5

PROPELLERS

§The B.F. Goodrich Propeller Feed Shoe and Ring.	Navier 03-35A-501
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STARTERS

Operation, Service and Overhaul Instructions with Parts Catalog for Eclipse 1416-6-8-12-16 Direct-Cranking Electric Starters, Revised Aug. 15, 1946.	AN 03-5CA-26
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AIRFRAMES

§Pilot's Handbook for AD-1, June 15, 1946.	AN 01-40AQ-1
Erection and Maintenance Instructions for HO2S-1, Reissue dated June 14, 1946.	AN 01-23OHB-2
Erection and Maintenance Instructions for R3C-1, Revised July 15, 1946.	AN 01-25LA-2
Erection and Maintenance Instructions for Army Models C-47, C-47A, C47B Navy Models R4D-1, -5, -6, -7 Airplanes, Revised Aug. 5, 1946.	AN 01-40NC-2

AIRPLANE BULLETINS, CHANGES

F8F

Cancelled: 139	
Bulletin	
§Furnishings—Pilot's Seat—Stop Fitting—Location of, Oct. 22, 1946.	141

F7F

Change	
§Wings—Bomb Rack Fittings—Modification and Replacement of, Oct. 14, 1946.	39
Bulletin	
§Engine Nacelle—Battery Support—Inspection and Reinforcement of, Oct. 16, 1946.	35

F8F

Bulletins	
§Electrical—Cowl Flap Control Unit—Inspection of, Oct. 10, 1946.	20
§Landing Gear—Down Lock Switch Boot—Inspection of, Oct. 16, 1946.	22
§Electrical—Running Light Disconnect Cable Assemblies—Inspection of, Oct. 16, 1946.	23
§Arresting Hook—Replacement of, Oct. 22, 1946.	25

F4U/F3A FG

Changes	
§Electrical—Approach Light Installation—Modification of, Oct. 14, 1946.	238
§Electronics—Combination Earphone and Mask Microphone Cord, Type CX-922/AR—Installation of, Oct. 8, 1946.	249
§Fuselage—Front Section—Station 149 to 154.5 Size Panels and Web—Reinforcement of, Oct. 10, 1946.	254
Bulletins	
§Fuel System—Lubricating System, Anti-Blackout Installation, and Oxygen System—Flexible Hoses—Replacement of, Oct. 14, 1946.	280
§Fuselage—Tail Section—Stations 288 to 310—Rivets—Inspection of, Oct. 16, 1946.	286

FR

Change	
Safety of Flight: 30	
§Wings—Wing Fold Warning Flag—Installation of, Oct. 8, 1946.	30
Bulletin	
§Electrical—Battery Relay—NAF-1204-3, Inspection of, Oct. 18, 1946.	23

JRB/SNB

Bulletin	
§Radio Installation—Modification of, Oct. 16, 1946.	56

JD

Bulletin	
§Landing Gear—Position Selector Valve Solenoid and Nose Wheel Assembly—Inspection, Oct. 16, 1946.	3

J2F

Change	
§Arresting Hook—Removal of, Oct. 10, 1946.	33

PBM

Bulletin	
§Electrical—Motor-Pump—Automatic Pilot Hydraulic System—Replacement of, Oct. 8, 1946.	173

PB4Y

Bulletin	
§Engines—Model R-1830-94 Revised Operating Limits Recommended for Routine Operation, Oct. 10, 1946.	234

PV

Bulletin	
§Armament Provisions—Installation Provisions for Viewing Bomb Bay Contents in Flight, Sept. 26, 1946.	190
§Instruments—Pitot Tube Installation—Airspeed Placard—Installation of, Oct. 10, 1946.	191
§Tail—Fuselage to Horizontal Stabilizer Attachment Fittings and Bolts—Inspection of, Oct. 7, 1946.	192

RY

Bulletin	
§Engines—Model R-1830-94 Revised Operating Limits Recommended for Routine Operation, Oct. 10, 1946.	93

SB2CSBF-SBW

Change	
§Armament Provisions—20MM Gun Heaters—Installation of, Oct. 2, 1946.	162

SC

Cancelled: 68	
Bulletin	
§Engine Section—Accessories—Intercooler Support Rods—Modification of, Oct. 8, 1946.	107

TBF/TBM

Cancelled: 159	
Change	
§Tail—Rudder Fabric Intercoastal Attachment—Modification of, Sept. 26, 1946.	251
Bulletin	
§Engine Accessories—Crankcase Breather Line—Modification of, Oct. 22, 1946.	227

INSTRUMENTS

General

Aircraft Instrument Bulletins:	
Cancelled: 6-46, 7-46, 11-46, 17-46, 20-46.	
§Pioneer Instruments, Sept. 26, 1946.	30-46
§General Electric Instruments, Oct. 8, 1946.	31-46
§Sperry Instruments, Oct. 22, 1946.	32-46
§Class 88 Instruments Bearing Lubrication—Material for, Oct. 18, 1946.	33-46

AUTOMATICS PILOTS

G-1: General Electric

*Parts Catalog for Automatic Pilot 2CJ1A1 Revised July 15, 1946.	AN 05-45AE-3
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(Continued on next Page)

Leakage of Oxygen at Sea Level

Automatic continuous flow oxygen regulators obtained from stock and tested prior to installation in passenger systems in transport aircraft have been reported to leak, permitting a flow of oxygen at sea level.

Attention is invited to the fact that a slight leakage, although not in accordance with procurement specifications, may not render the regulator unsuitable for use, since the outlet check valves in the distribution system cause a back pressure build-up which promotes sealing at the reducers.

Furthermore, where these regulators are installed in transport aircraft with Navy oxygen cylinders, the cylinder shut-off valve affords a positive seal during standby. Regulators with slight flows at sea level will not cause an increase in oxygen consumption during use at altitude.

If tests performed in accordance with the procedure outlined in the *Handbook of Instructions* AN-03-50A-10 dated 10 April 1945 indicate excessive leakage, first and/or second stage adjustments, as described in the handbook can be made in order to obtain acceptable performance.

It is not believed that any of the materials in the regulators have deteriorated with age but that the only defects are in the settings of the first and second stage pressures which can be made locally.

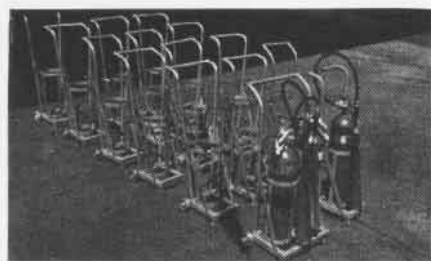
A&R Shops Vie for Jax Trophy

NAS JACKSONVILLE—A&R department has instituted an attendance award program for all production shops. Beginning with April, excellent attendance records of individual production shops were recognized by the awarding of an attendance pennant to the

shop amassing the best work record.

All absences including annual leave, sick leave, emergency leave, and unauthorized absences for civil service employees, and annual, reenlistment, and emergency leave for enlisted personnel are included in the computation of shop attendance. Since a maximum of 10% annual leave is authorized civil service and enlisted personnel in all shops equally, all shops will be competing on the same basis.

An attendance pennant will be awarded each A&R shop which maintains an 87% or better attendance for three consecutive months. This pennant will be retained by the shop to which awarded as long as the 87% minimum attendance is maintained among its working force.



FIRE BOTTLE STAND USES SPARE MATERIAL

New Truck Carries Fire Bottles

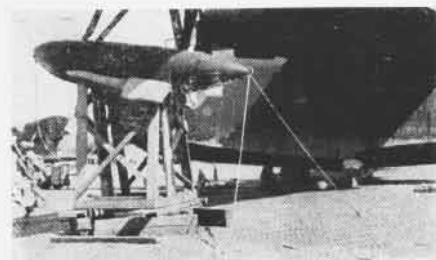
CASU-32—Using materials, with the exception of castor wheels, salvaged from scrap, this unit has constructed portable fire bottle stands which are both useful and cheap.

The stands require about two man-hours to make and can be made either as "singles" or "doubles." The ready accessibility and convenient portability readily can be seen. The CASU finds them invaluable as time-savers around its scattered warm-up mats and operation lines. Handles are made in such a

way that they can be tractor-towed as well as pulled by hands.

Dimensions are: base, 11"x8½"; mounting bracket, 15½"x7½"; handle, 35" high; cross-handle at top, 13".

The photo shows a number of the trucks.



WING FLOAT CRADLE SUPPORTED 3000 LBS.

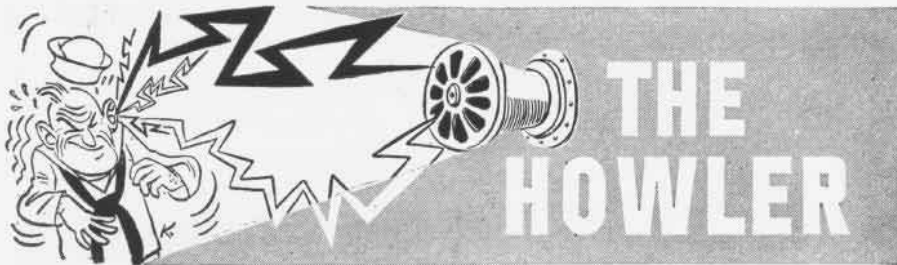
Lifting a PBM Without a Crane

VP-28—While launching a PBM-5, a 2" hole was punched in the bottom of the hull by the port beaching gear. The plane was pulled back on the beach and, since no crane was available, the squadron improvised a repair idea which worked successfully.

The plane was listed by placing a jack under the port beaching gear. Cradles were improvised and slid under the step and port wing float. The cradles were of such a height that when the plane was lowered on them the port beaching gear was suspended, easily removed, and repairs accomplished.

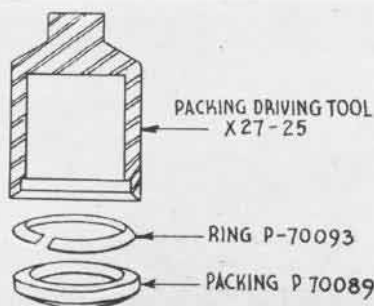
Sandbags were used to cushion the cradle placed under the step, and mattresses were used as a cushion under the port float. Weight of the plane was supported mainly by the step cradle and starboard beaching gear, with the float cradle supporting about 3,000 pounds and serving as a balance. Sandbags were placed on the starboard wing to aid in proper balance.

Title	Order No.	
COMPASS		
Operation, Service and Overhaul Instructions with Parts Catalog for Pioneer R88-I-800, R-88-I-800-10, R88-I-801, R88-I-803, R88-I-1950 Remote Indicating Magnetic Compasses, Revised Aug. 15, 1946.	AN 05-15-5	Handbook of Maintenance Instructions for Models AS-108B/APA-17 and AS-186/APA-17, Dec. 1, 1945. AN 16-35AS108-3
		Handbook of Maintenance Instructions for Radio Sets SCR-720-A and SCR-720-B Revised June 24, 1946. AN 16-40SCR720-3
		Handbook of Maintenance Instructions for Frequency Meter TS-186/UP, Feb. 15, 1946. AN 16-35TS186-3
		Handbook of Operations Instructions for Oscilloscope TS-239/UP, Sept. 1, 1946. AN 16-35TS239-3
GAGES		
Quantity (Fuel and Oil)		
Operation and Service Instruction for Fuel Level Gages (Liquidometer), Revised July 3, 1946.	AN 05-55A-5	
POWER PLANTS		
Modification Instruction for Aircraft Engines R-1830 Series, Revised Sept. 1, 1946.	AN 02-10C-500	
Overhaul Instructions for R-200-9 Revised July 1, 1946.	AN 02-10FB-3	
Modification Instructions for Aircraft Engines R-2600 Series July 15, 1946.	AN 02-35H-500	
Modification Instructions for Aircraft Engines R-4360 Series, Revised Sept. 15, 1946.	AN 02-10H-500	
GENERAL ENGINE BULLETIN		
Over-age Ignition Harnesses—Instructions Concerning Inspection Test and Use of, Oct. 4, 1946.	91	
RADIO AND RADAR		
Instruction Book for Analyzer Equipment, AN/APA-6, AN/APA-6A and AN/SPA-1, Aug. 20, 1945.	AN 16-30APA6-7	
SHIPS' INSTALLATIONS		
Arresting Gear Bulletin		
Arresting Gear Hydraulic System—Filling and Draining of Oct. 10, 1946.	22	
CATAPULTS		
Catapult Publications		
Handbook of Instructions for Operation and Maintenance Catapult Type P, Mark 6, Mod. 2 with Catapult Gun Type P, Mark 6, Mod. 3 with Catapult Gun Mark 10, Mod. 0, Re-issued Aug. 1, 1946.		Navaer 51-15PB-501
DEPUTY CHIEF OF NAVAL OPERATIONS (AIR)		
Training Films		
Catalog of Training Films for the U. S. Navy, Marine Corps, July 1946.		Navaer 00-80V-69
AEROLOGY		
Aerology Bulletin		
Radiosonde Observations, Time of Release, Oct. 21, 1946.	25-16	
Designates New Publication		



Carburetor Valve Packing. During the past few months the Bureau of Aeronautics has received numerous reports that engines equipped with PD type carburetors would continue to operate with the mixture control in the idle cut-off position. Of seven defective carburetors discovered, five were on new engines and two from stock. The carburetors were in original condition, never overhauled. In each case the poppet valve packing P/N P-70089, was found to be at fault. Damage to the packing is believed caused by use of a sharp tool to install packing in rear body assembly of fuel regulator unit. Damaged packing permitted fuel to by-pass poppet valve, destroying calibration of carburetor and allowing sufficient fuel flow for engine operation at low speed.

In some cases this trouble can be cured by tightening the poppet valve packing



CARBURETOR POPPET VALVE PACKING TOOL

nut to 150 to 200 inch pounds, while in the remainder a new packing must be installed. NAMC, NAF, Philadelphia, submitted a tool for installing packing, P/N 70089, in type PD-12 Stromberg carburetor and made the following recommendation: "It is suggested that the carburetor manufacturer and naval overhaul activities be advised of the difficulties encountered at this activity, cautioned on danger to operating personnel, and advised of the tool, the use of which it is believed will eliminate this trouble entirely."

The schematic drawing of the tool (see illustration) can be supplemented with details from the reporting activity.

Laxity in Engine Clutch Desludging. A COMAIRPAC letter of recent date is quoted in part to illustrate the constantly increasing number of supercharger clutch failures on P&W 2-stage engines being experienced in the field.

"Service experience has positively shown that stuck supercharger clutches will rarely be experienced with the R 2800-10W engine installed in R6F-5 airplanes if, and only if, the clutch is properly exercised in service

by the operating activity in accordance with Technical Order 80-45. The pumping of special fluids through the supercharger clutch during routine checks per R 2800 Bulletin No. 206 and various improvement changes to the clutch such as R 2800 Bulletin No. 236 will lessen the likelihood of failure by activities who do not desludge clutches as often as required.

"It is directed that . . . take such action as is necessary to assure that Technical Order No. 80-45 is complied with before and after each flight. . . . This means that the supercharger clutches will be tested in each blower prior to every flight. The only two acceptable methods of desludging supercharger clutches are to exercise the clutch in each blower at the chocks after each flight or to taxi back after landing alternately in high and in low blower. It is not necessary to maintain any specific minimum RPM or oil pressure when taxiing back as the clutch is being deslugged and not tested."

The effect of disregarding the above instructions, as set forth in Technical Order No. 80-45 is wasteful and costly. While it is believed that all operating activities are instructed in desludging application, it is known that some activities which operate aircraft on low blower only consider that it is not necessary to desludge as long as they don't have to shift to high blower. This is an erroneous assumption. Continued engine operation at low blower without periodic desludging will affect engine operation adversely and may result in ultimate failure.

At a time when appropriated funds are being reduced drastically, the need for prolonging the life of engines and keeping them in good repair by high efficiency of operation and maintenance is even more acute. Rigid compliance with Technical Order No. 80-45 is imperative.

Water in F4U Fuel System An F4U ditched. The full belly tank had exploded. Water with burning gasoline on top was filling the cockpit, and the canopy had sheared off the safety-lock and slammed shut. The pilot tried to roll back the canopy but could get only an eight-inch opening. He tried to pull the emergency hood-jettisoning pins. They were engulfed in flames. As the plane began to sink, he forced his head and shoulders through the eight inches, but his seat-type parachute caught half-way through. With his feet on the windshield he gave a terrific wrench which freed him from the plane about 25 feet under water. Coming up to the surface, his head hit the rudder of the plane.

They fished the pilot out of the ocean

when the plane guard destroyer came alongside, but it hadn't been a pleasant experience.

Sudden engine failure had occurred while this F4U was flying in formation, about 25 minutes after being catapulted from its carrier. At 700 feet the engine quit without warning. All engine gauges read normal. The pilot notified his ship, opened and safety-locked the hood, and tried to jettison his belly tank.

Several layers of masking tape which had been stretched across the left pylon emergency release handle to prevent inadvertent belly tank release worked all too well. It wouldn't drop in the short time available before the plane hit the water, doing about 95 to 100 knots on impact. The explosion resulted.

Ten minutes later another F4U-4 in the same formation encountered identical complete and sudden engine failure and had to ditch. The pilot of this second plane got rid of his belly tank when preparing for ditching, but his hood also jammed shut after having sheared the safety-lock.

The squadron's investigation developed two possible causes of the engine failures: 1. carburetor icing; 2. water or other impurities in the fuel. Nearly perfect icing conditions prevailed at the time of the engine failures. P&W engineers stated that even though the carburetors employed were supposed to be practically non-icing, once throttle icing began it would proceed rapidly. Pilots, however, did not concur that icing was probable cause and stated that neither engine showed signs of power loss before failure.

Check of the AEL units of several planes showed the presence of a quart or more of water. In the opinion of P&W engineers, if the carburetor had received a straight shot of water, the air-fuel ratio would have become too low to support combustion. It is recommended that AEL units be checked before each flight, particularly when fuel has been drawn from tanks aboard ships which use salt water ballast.

The fact that engine failure occurred several minutes after the pilot switched on his transfer pump would tend to substantiate the theory that water in the belly tank was pumped into the main tank, was picked up by the engine-driven fuel pumps, sent to the carburetor and thence to the cylinders. With the aircraft in a three-point attitude on deck, water in the belly tank probably would not show up in the pilot's pre-flight check for belly-tank suction. As soon as the aircraft assumed normal flight attitude and the tank's longitudinal axis became more nearly horizontal, the first fluid to be drawn into the main tank by the transfer pump would be water or other existing impurities.

For the water to be drawn into the main tank, sink to the bottom, and be drawn to the carburetor, would consume the minute or two time interval mentioned by the pilot between initial transfer pump operation and engine failure. Any type belly tank in use should be checked frequently for water and should be kept as full as possible at all times to avoid corrosion.

BUAER Maintenance Division, Power

Plants, concurs that water content in the fuel is probable cause of these failures. It also suggests the possibility that sudden and complete engine failure may be caused by the mixture control being forced into idle-cut-off position due to failure of the induction system duct connections, as described in Naval Speedletter, Aer-PP-31, No. 38017, of 20 May 1946, and in F4U-F3A-FG Aircraft Bulletin No. 247. All activities concerned with F4U aircraft should refer to these directives.

With regard to the hoods of the two F4U's closing on impact, investigation of other aircraft in the squadron revealed incorrect installation of Aircraft Service Change #222. (See NANEWS, September 1946, page 36.)

Commenting on the squadron opinion that more than one layer of masking tape over any lever or switch is a hazard, BUAER states that the normal method of securing emergency handles is by the use of fine safety wire.

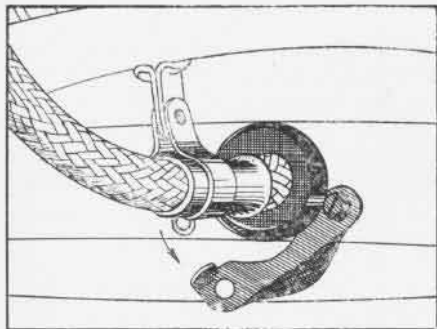
Target Tow Reel! A recent target towing accident in a J0-1 aircraft, during high speed target towing tests, resulted in injury to the tow reel operator and extensive damage to the tow reel installation and to the aircraft.

To determine the drag load of the towed target and cable at high speeds, a Klein "Chicago" Grip, Stock No. 3-9-10-66, was used in transferring the cable load, normally on the tow reel, to the tensiometer.

Under a load of approximately 1600 lbs. the bail of the grip broke, resulting in a runaway reel, and the subsequent disintegration of the reel drum flanges. The flying fragments of the disintegrated flanges caused the injury and damage.

While the failure of the grip was the direct cause of the accident, it is pointed out that had the clutch of the target reel been properly engaged in accordance with the instructions contained in the preliminary Operating Instructions for the Mk 8 Target Reel Installation, little or no damage would have resulted.

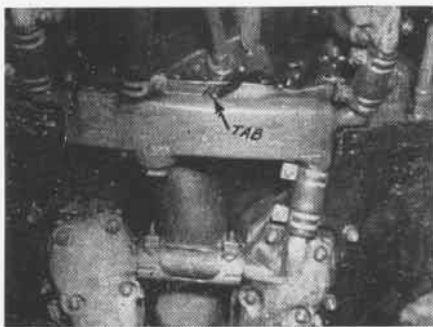
A Technical Order directing proof testing of each Klein "Chicago" Grip both in service and in stock is being prepared. BUAER is investigating procurement and test of a replacement item.



Manifold Damaged. The rocker arm oil collecting manifold (P&W P/N 82398) on R-2800-34 P&W engines is reported damaged by the ignition lead securing tab on the deflector assembly (P&W P/N 87009). The latch vibrates loose from the locking pin and abrades a deep groove in the manifold.

Operating activities should inspect for this trouble at all pre-flight checks.

NAS COCO SOLO Local Engineering Instruction 7-46 of 8 October 1946 outlines procedure for rework of the deflector assembly. The latch retaining pin on the deflector assembly is removed and the remaining hole enlarged to .1875". An anchor nut, AN-366-DF1032, is riveted on the rear of the deflector assembly. (See Coco Solo Dwg. SK-550.) When the deflector is assembled on the engine, the ignition lead latch assembly is bolted with a 10-32 bolt, using the anchor nut installed on the deflector assembly.



LOOSE TAB ABRADES A HOLE IN MANIFOLD

Publication of Engine Bulletins

With the discontinuance of engine bulletins (other than General Engine Bulletins or Supplements to existing bulletins) in accordance with ACL 136-46 of 18 September 1946, it will now become more important than ever to scrutinize all Revisions that are issued to Engine Service and Overhaul Instruction books.

Bulletins formerly issued included both instructions on rework or modification of engine parts and matter of a purely procedural nature. In the new system, material in the latter category will be incorporated directly into Revision pages to the Service and Overhaul manuals and no bulletin will be issued. It will not be necessary to re-read the entire Revision page to see what revisions were made, since a heavy black vertical line to the left of the text will indicate the revised portion of the instructions.

Some bulletins issued in the past, not falling in the rework or modification classification, contained informative material calling attention to significant details in existing permanent instructions which needed emphasis in light of recurring reports of service difficulties. Under the new system, material for such bulletins will be incorporated in NAVAL AVIATION NEWS or, if lesser distribution is in order, will be made the subject of an informative multiple address letter. Thus the pile up of bulletins which caused a dilution of basic instructions and required constant review for cancellations will be avoided.

Other bulletins issued in the past

contained new parts interchangeability data. Such data now will be incorporated directly and permanently into Revision pages to parts catalogs.

Aircraft to Use Combat Power

During the war many a Naval Aviator fought the Japs and ran away when he had to, thanks to water injection in his engine. Combat power gave his plane the added few miles an hour necessary to outdistance his pursuers when he was out of ammunition or for some other reason could not fight it out with them.

Unrestricted use of combat power during peacetime is inadvisable due to its bad effect on engine reliability and durability. However, it is not being tossed out entirely, according to T.O. 28-46.

All first-line service aircraft equipped for combat power will have that equipment maintained in good shape. Fleet pilots will be able on occasion to operate planes under full power so they will know how it is done. Use of full power during authorized gunnery practice will be permitted if accurate records of time accumulated on each engine is maintained. Pilot check-out will include indoctrination in combat power. Planes assigned to training commands will have the combat power equipment removed.

Telescoping Pipe Aids Drainage

CASU 32-At this activity the wind velocity has reached as high as 40 knots, causing oil being drained from engines to be blown all over the working areas.

A simple cure was found for this problem. By welding a telescoping funnel-pipe to the top of the drainage can, the oil can be caught and safely collected without mishap.



DRAINAGE CAN FIXTURE STOPS OIL SPRAY



TEMPLATE GUIDES WOOD DURING CUTTING

Oxygen Cylinder Stack System

MCAS EL TORO—A better method of handling steel cylinders than stacking them in a corner, where they are easy to knock over, has been developed by an employee of the storage section of Supply. He received \$100 award for the idea.

Three tiers of 15 cylinders are placed in one lot upon each pallet and the stacks are three lots high. Hence 45 cylinders now occupy space formerly used by 30 in vertical position. Cylinders are handled in lots by mechanical equipment, eliminating hand labor with all its hazards.

[DEVELOPED BY JOHN G. BONADURER]



RACK BOOSTS CYLINDER STORAGE SPACE

A carpenter in the department received an award for developing a mechanical guiding device to cut the circular shapes in the wood tiers. The device consists of a few small strips of light metal which hold the wood, pivoted at a point on the auxiliary table of the bandsaw near the blade. Using the device, all semicircular cuts were made true to form, in a quarter the cutting time.

[DEVELOPED BY JACOB C. GOULD]

Lip Mike Cuts Down Irritation

The Navy has standardized on the lip microphone assembly M-5A/UR which was put into use late in the war and has procured a combined microphone and

headset cord which will help eliminate the profusion of wires around a pilot during flight.

The cord, CX-922/AR (not shown in photo), is available for issue and a TN is in the works to explain its use in eliminating extension cords between the cockpit jackbox and the pilot's gear. No cord will pass in front of the pilot, thus giving him more freedom of movement.

The lip mike supersedes all other mikes, except the hand-held mike which is for certain limited uses. It replaces the old M-5-UR used during the war.



LIP MICROPHONE NOW STANDARD IN NAVY

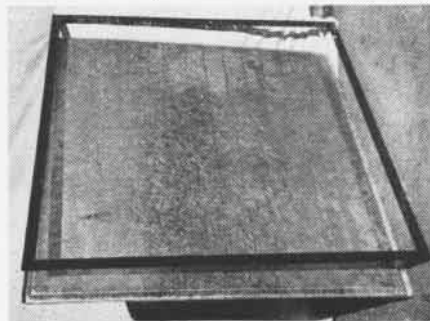
Mounted on a bracket which can be swung out of place, the M-5A/UR eliminates to a great extent engine noise and any other but the voice. Since it does not rest on the face, it cuts down on irritation caused by the old model.

It works on the headband style of headset assembly, the H-4/AR or the helmet-type assembly, H-1/AR when installed on a helmet. Some 27,000 of the lip mikes have been delivered to the Navy.

Farewell to Drip Pan Worries

CASU 6—This unit has developed an unflattenable drip pan! Having considerable trouble keeping flanged type drip pans in repair, a pan was constructed that would refuse to be marred by tractor or aircraft tire treads.

The new pan differs from the in-



ANGLE IRON RESISTS AIRCRAFT WHEELS

ferior product by having an angle iron that forms a pyramid on the deck, as shown in the photograph.

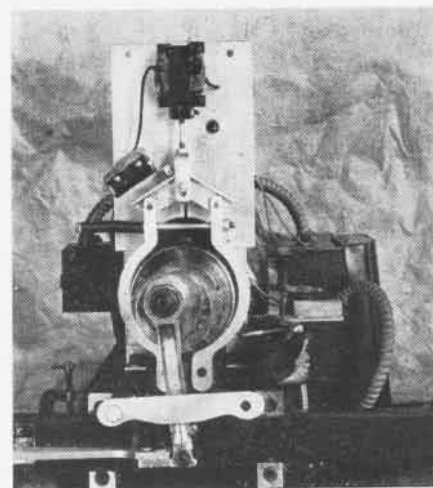
Any air station having an epidemic of flattened pans, can construct this resistant type in any size desired.

Fatigue Brake Prevents Damage

A brake was devised and installed on a plate flexure fatigue machine at NAVAL AIR EXPERIMENTAL STATION, Philadelphia, to prevent dangerous whipping of the specimen which resulted whenever failure of the specimen occurred.

The broken specimen fragment attached to the rapidly moving crank arm normally struck the machine and made it inoperative for succeeding tests. The motion is stopped in 2-3 seconds by use of the brake, despite the large amount of momentum contained in the heavy rotating eccentric.

The brake can also be used in connection with the 15,000-pound capacity direct stress fatigue machine. This machine, upon slowing down from the operating speed, passes through resonance with its vibration isolators and also resonance with the floor, thereby damaging the rubber isolators and applying severe vibratory loads to the



BRAKE CONNECTED TO FATIGUE MACHINE

floor. Such a brake will prevent the high loads resulting from resonance by bringing the moving parts rapidly through the resonant frequency.

BuAer Comment—This type of equipment is used extensively in determining the fatigue and endurance properties of materials as affected by composition, methods of joining, corrosion, notches, etc. The described brake should prove to be a valuable addition to the standard gear.

NAS SAN DIEGO—Reduction in service personnel and civil service employees has required the security office to set up a new guard program for the station. Civil service policemen patrol the station in pairs by jeeps. In this manner greater efficiency is possible than with foot patrolmen and the work takes fewer police than before.

INDEX TO NANNEWS

JAN. TO DEC. INCLUSIVE

1946

SUBJECT ISSUE PAGE

A

AAF uses nautical miles.....	Oct.....	9
A&R's cooperate on prop. RUDM's.....	Jan.....	30
Academy aviation program.....	Sept.....	1
Academy graduates at Jacksonville.....	Nov.....	9
Academy plans aviation courses.....	May.....	18
Acrobatics, air.....	Dec.....	11
AD-1 cockpit controls simplified.....	Dec.....	24
AD-1 dive-bomber.....	Oct.....	17
Advanced air training.....	Oct.....	1
Advanced bases, postwar.....	Sept.....	22
Advanced training bases closed.....	Nov.....	12
Aerographer's Mates training.....	Sept.....	17
Aerological laboratory, NAS Lakehurst.....	Sept.....	17
Aerology, thunderstorm flights.....	Mar.....	12
Aerology, weather models.....	Oct.....	18
Aeronautical Board reinstated.....	Mar.....	14
Air Navigation project set up.....	Mar.....	14
Air Reserve, pilots.....	May.....	26
Air Reserve program.....	Nov.....	8
Air Reserve training.....	Dec.....	16
Air Reserve training.....	Mar.....	15
Air/sea rescue back to Coast Guard.....	Sept.....	9
Air/sea rescue name changed.....	Oct.....	10
Air training at Annapolis.....	Sept.....	1
Aircraft preview.....	Nov.....	10
Airspeed indicator, fighter planes.....	Feb.....	27
Aircraft, new Navy planes.....	Apr.....	20
Airfield evaluation program.....	May.....	23
Airplanes to ingots.....	Apr.....	30
Alameda celebrates anniversary.....	Jan.....	18
Alaska NATS flights stopped.....	Nov.....	15
Altitude tests.....	Sept.....	26
Aluminum stress-corrosion tester.....	Nov.....	37
Ambulance planes.....	Aug.....	20
Anniversary of naval aviation.....	Oct.....	9
Anniversary of naval aviation, date set.....	Nov.....	15
AR-4 lifeboats fit bomb-bays.....	May.....	31
AR-8 airborne lifeboat.....	Jan.....	16
AR-8 liferaft placing on PBY.....	Mar.....	24
Atlantic patrol base in Azores.....	Jan.....	11
Atlantic vigil.....	June.....	26
Atom bomb test, air service.....	Nov.....	31
Atom bomb test, carriers.....	Mar.....	10
Atom bomb test, helicopters.....	Sept.....	24
Atom bomb test, NATS.....	Dec.....	17
Atom bomb test, photography.....	July.....	12
Atom bomb test, photography.....	Sept.....	12
Atom bomb test, photography.....	Nov.....	4
Atom bomb test, radioactivity.....	Oct.....	16
Atom bomb test, rescue training.....	Sept.....	18
Automatic pilot training panel.....	Nov.....	35
Aviation at Annapolis.....	Sept.....	1
Aviation Boatswain's Mate training.....	Nov.....	24

B

Bail-outs, high speed.....	Nov.....	21
Barriers, new ideas needed.....	Aug.....	17
Basic air training.....	Aug.....	1
Bat guided missile.....	Feb.....	15
Bat guided missile demonstration.....	Dec.....	26
Batten for PB4Y-2 rudders.....	Jan.....	30
Baiting a thunderhead.....	Mar.....	12
Beaching seaplanes.....	Oct.....	27
Bennington lands 646 one day.....	May.....	19
Bikini photography.....	Sept.....	12
Bird visitors foul up runways.....	June.....	16
Bomber, Douglas AD-1.....	Oct.....	17
Boom, refueling tank.....	Feb.....	28
Brake maintenance.....	Sept.....	36
Brake test and pressure unit.....	Jan.....	32
British seadrome.....	Jan.....	17
Broadcasting from planes.....	Feb.....	33
Bunker Hill duty is recorded.....	Feb.....	24
Buoy, seaplane mooring.....	Jan.....	43

C

CAA recognizes aircraft engines diploma.....	Apr.....	14
Cannon, 20mm, tie rods.....	Feb.....	29
Canopy safety latch, Corsairs.....	Sept.....	36
Carburetor air adapter.....	Oct.....	31
Carburetor jig saves time.....	Feb.....	39
Carburetors reworked.....	Nov.....	27

SUBJECT ISSUE PAGE

Carrier FDR on Mediterranean cruise.....	Dec.....	14
Carrier Midway.....	Feb.....	1
Carrier photographers.....	Nov.....	1
Carrier preservation, <i>Wasp</i> inactivated.....	July.....	1
Carrier pilot has no left leg.....	June.....	18
Carrier <i>Ranger</i> decommissioned.....	Dec.....	22
Carriers receive unit citations.....	Aug.....	10
Carriers to join Atomic Task Force.....	Mar.....	10
Carriers turned by plane thrust.....	Sept.....	15
CASU 36.....	June.....	37
CASU 6 improvises log book.....	Mar.....	19
Catapult.....	Jan.....	1



Catapult Fire.....	Aug.....	18
Center of gravity effects on flight.....	Nov.....	19
Central Examining Board.....	Jan.....	22
Centrifuge, human.....	Dec.....	1
Chart room, Norfolk.....	Aug.....	12
Check on carburetor air leaks.....	Jan.....	30
China patrol.....	Apr.....	24
Chute for F7F radar operators.....	Feb.....	27
CIC.....	June.....	1
Clean plug barrels in new device.....	Apr.....	34
Clinton plane salvage operations.....	Sept.....	33
Close air support.....	Jan.....	25
Coast Guard resumes air/sea rescue.....	Sept.....	9
Cockpit design.....	Dec.....	24
Cockpit seats redesigned.....	June.....	18
Cold weather operations.....	Apr.....	13
Cold weather take-offs.....	Nov.....	13
College training for USN transfers.....	Aug.....	10
Combat air crew school reorganized.....	May.....	11
Combat Information Center.....	June.....	1
Commendation award to VP-71.....	Sept.....	10
Communications billets for pilots.....	Oct.....	10
Constitution.....	Oct.....	11
Control tower operators.....	Sept.....	21
Controls simplified on AD-1.....	Dec.....	24
Coronados scrapped.....	Sept.....	9
Corrosion control by spraying.....	Nov.....	37
Corsair service change #222.....	Sept.....	36
Cost accounting in A&R.....	Oct.....	28
Cost accounting works in A&R's.....	Jan.....	31
Cost of air travel computed by Marines.....	Nov.....	15
Crossroads photography.....	July.....	12
Crossroads photography.....	Sept.....	12
Crossroads rescue training.....	Sept.....	18
Crossroads, target ships.....	Sept.....	10
Crystals, radio.....	July.....	29
Curtiss fighter, F14C.....	Apr.....	15
CVB shakedown.....	Feb.....	1
Cycloid propeller.....	Nov.....	20
Cylinder honing device gets award.....	Nov.....	29

D

Deceleration vest prevents fatalities.....	Aug.....	26
Designations, aircraft.....	June.....	19
Detector, airborne, in mineral surveys.....	Oct.....	30
Device men given new initials.....	July.....	17
Diego man carries on from bed.....	May.....	19
Dilbert artist gets award.....	Feb.....	24
Dilbert to fly as civilian.....	June.....	17
Ditching technique instruction.....	Sept.....	11
Dive-bomber AD-1.....	Oct.....	17
Drone group will be at Mojave.....	Mar.....	26
Drones in atom bomb photography.....	Sept.....	12



SUBJECT ISSUE PAGE

E

Ejection seat.....	Dec.....	1
Electrical circuits, accidents.....	Jan.....	31
Electronics officers needed.....	Sept.....	31
Electronics training at M.I.T.....	Sept.....	20
Electronics training course lengthened.....	Nov.....	14
Emergency exit on N2S plane.....	Feb.....	28
Emily, Japanese seaplane.....	Oct.....	24
Engine care race against corrosion.....	Aug.....	32
Engine evaluation, overhauled R-2600-20.....	Nov.....	30
Engines, jet.....	Aug.....	9
Engines, moving of.....	Oct.....	31
Enlisted men can now enter V-5.....	Mar.....	14
Esser pilot has close shave.....	Jan.....	18
Esser war record.....	Feb.....	20
Exhibition pilots perform.....	Oct.....	12
Ex-NATS pilots to aid Reserve.....	Aug.....	11
Experts dig out enemy data.....	Aug.....	22

F

Fabric failure, rudder PBM-5.....	Oct.....	37
FASRON's under I. A. P.....	Oct.....	36
FD-1 jet engine.....	Nov.....	17
FD-1 jet plane, carrier landing.....	Sept.....	16
FDR on Mediterranean cruise.....	Dec.....	14
FJ-1, jet fighter.....	Nov.....	10
Ferry command changes.....	Aug.....	14
Ferry pilots have good record.....	Feb.....	23
FIDO.....	Feb.....	17
Fighter aircraft, F14C.....	Apr.....	15
Fighter aircraft, F5U.....	Aug.....	13
Fighting Lady, filming of.....	Apr.....	12
Filming a winner.....	Apr.....	12
Finishing magnesium.....	Feb.....	31
Fleet Air Reclassification Center.....	Jan.....	18
Flight clothing, winter.....	Nov.....	29
Flight testing with telemetering.....	June.....	11
Fluid testing of defuel valves.....	Feb.....	27
Flying flit guns fight tropic bugs.....	July.....	20
Flying off snow-covered field.....	Apr.....	14
Flying "on the step".....	Nov.....	19
Fog dispersal.....	Feb.....	17
Fog dispersal, chemical.....	Mar.....	26
French students turn homeward.....	Aug.....	12
FR-1 makes first jet landing.....	Mar.....	16
F6U-1 jet fighter.....	Nov.....	10
Fuel leaks, R5D.....	Jan.....	30
Fuel metering jet boring tools.....	Jan.....	30
Fuel system impurities.....	Nov.....	28
Future Navy planes designated.....	June.....	19

G

Gasoline procurement.....	Oct.....	29
GCA.....	May.....	13
GCA standard for air stations.....	Dec.....	12
Glyneo is headquarters site.....	Mar.....	13
Grosse Ile locked ice problem.....	Mar.....	13
Ground controlled approach.....	May.....	13
Grumman receives merit medal.....	June.....	16
Guided missile <i>Bat</i> demonstration.....	Dec.....	26
Guided missiles.....	Feb.....	15
Gunfire spotters to get wings.....	Apr.....	15
Gunnery, <i>Bearcat</i> stabilizers damaged.....	Sept.....	28
Guns, new developments.....	July.....	16

H

Hail damages planes.....	Oct.....	16
Hangar deck map aids students.....	Apr.....	13
Heater installation, TBF/TBM.....	Jan.....	30
Heater prototype installations.....	Feb.....	27
Helicopter HJD-1, twin engine.....	Nov.....	10
Helicopters at Bikini.....	Sept.....	24
High speed bail-outs.....	Nov.....	21
High speed flight.....	Dec.....	1
History of Navy's air war.....	Nov.....	13
HJD-1, twin-engine helicopter.....	Nov.....	10
Hood safety latch installation.....	Sept.....	36
Hose clamp failures, correcting.....	Feb.....	27
Hurricane safeguards, securing planes.....	Sept.....	31
Hydraulic fluid improved.....	Nov.....	28
Hydraulic leakage.....	Oct.....	33
Hydraulic leaks, wing folding device.....	Nov.....	27

JAN. TO DEC. INCLUSIVE

SUBJECT ISSUE PAGE



I

Ignition guard on F7F.....	Sept.....	28
Inspection department, Jacksonville.....	Sept.....	37
Instrument flight, hood for simulated Nov.....	29	
Instrument flight instructors school.....	July.....	14
Instrument flight, Marine course.....	Oct.....	16
Instrument operation aided by vibrator.....	Oct.....	28
Instrument Sense Pamphlet out.....	Aug.....	11
Instrument testing panels.....	Sept.....	37
Integrated Aeronautics Program, maintenance.....	Oct.....	36
Integrated Aeronautics Program, postwar.....	Sept.....	23
Inyokern pilot flies milk for baby.....	Dec.....	12
Insider modified.....	June.....	14
Iowa Pre-Flight closes down.....	May.....	26
Islands plotted by aerial flares.....	Aug.....	13

J

Jacks, improved nose.....	Oct.....	28
Japanese air base dismantled.....	Sept.....	20
Japanese equipment used by MAG 31 Sept.....	22	
Japanese patrol plane.....	Oct.....	24
Japan's submarine "hangars".....	Mar.....	11
JATO lifts Mars.....	Nov.....	15
Jax PBM rescues sick mariner.....	Aug.....	10
Jax sets up two safety awards.....	May.....	18
JD-1.....	June.....	14
Jet aircraft, FJ-1.....	Nov.....	10
Jet aircraft, F6U-1.....	Nov.....	10
Jet assisted take-off on Mars.....	Nov.....	15
Jet carrier landing.....	Mar.....	16
Jet engine maintenance.....	Jan.....	40
Jet engine of FD-1.....	Nov.....	17
Jet engines.....	Aug.....	9
Jet engines in P4M.....	Dec.....	10
Jet engines, light weight.....	Jan.....	39
Jet FD-1 lands on Roosevelt.....	Sept.....	16
Jet plane, German model studied.....	Sept.....	11
JL-1 utility amphibian.....	Nov.....	10
JM-1 carries television gear.....	June.....	16
Joint Task Force One.....	Mar.....	10

K

Knots measurements used by AAF.....	Oct.....	9
-------------------------------------	----------	---

L

Lancers give exhibitions.....	Oct.....	12
Landing aid from lights.....	Sept.....	18
Landing aids experiment station.....	Feb.....	17
Landing aids experiment station.....	Dec.....	27
Landing gear dolly finds favor.....	Feb.....	39
Landing gear testing.....	Sept.....	30
Liferaft, AR-4.....	Sept.....	30
Liferaft, AR-4.....	May.....	31
Liferaft, AR-8.....	Jan.....	16
Liferaft, AR-8, hoist for.....	Mar.....	24
Liferaft gear reduced.....	Nov.....	34
Liferaft, M-3r multi-place.....	Feb.....	28
Link instructors school.....	May.....	29
Link trainer crabs.....	Nov.....	28
Link trainer operators flying.....	Sept.....	25
Link trainer, short course.....	Mar.....	13
Link trainers.....	Apr.....	15
Link trainers, pilots operate.....	Nov.....	14
Lockheed patrol plane, P2V.....	Feb.....	29
Lone Ranger rescue saves FR-1.....	Mar.....	17
Loran.....	Jan.....	12
LTA flight training.....	Nov.....	14

M

Machining magnesium.....	Jan.....	38
MAG-31 operates feeder line.....	May.....	18
Magic carpet run is near end.....	Mar.....	14

SUBJECT ISSUE PAGE

Magnesium, finishing.....	Feb.....	31
Magnesium, machining.....	Jan.....	38
Magneto timing tool.....	Jan.....	33
Maintenance learned by pilots.....	Sept.....	27
Maintenance, PBM's at Bikini.....	Nov.....	31
Maintenance under I.A.P.....	Oct.....	36
Majuro housing project.....	Sept.....	22
Manifold change speeds drying.....	Feb.....	28
Marine Corsair flies 17 hours.....	June.....	19
Marine flyers start 35th year.....	May.....	19
Marines aid blind Jap prisoner.....	Aug.....	12
Marines analyze travel costs.....	Nov.....	15
Marines find Jap navy dug in.....	Aug.....	13
Marines open technical school.....	Apr.....	14
Marines receive survival data.....	Mar.....	14
Marines study bail-out system.....	Apr.....	13
Mars, Pacific routes.....	Oct.....	32
Mars uses JATO.....	Nov.....	15
Material Center open house.....	Dec.....	7
Mediterranean cruise of FDR.....	Dec.....	14
Merger symposium.....	Mar.....	9
Midshipmen flight training.....	Sept.....	1
Midway Arctic cruise.....	Oct.....	26
Midway shutdown.....	Feb.....	1
Milk delivered by Navy plane.....	Dec.....	12
Mobile repair unit for R5D.....	Jan.....	43
Motion picture camera school.....	Oct.....	20

N

NAMC open house.....	Dec.....	7
NATS.....	Mar.....	1



NATS Arctic flights.....	Oct.....	16
NATS Crossroads transportation.....	Dec.....	17
NATS flies new national routes.....	Aug.....	13
NATS flights have movies.....	Aug.....	13
NATS hospital flights.....	Aug.....	20
NATS moves from Oakland to Moffett Nov.....	16	
NATS schedules revised.....	Oct.....	10
NATS transports monkeys for polio research.....	Dec.....	13
Naval air activities shut down.....	May.....	18
Naval aviation's birthday determined Nov.....	15	
Naval aviation's 33rd birthday.....	Oct.....	9
Naval Research Laboratory.....	May.....	4
Navigation aid developed.....	Sept.....	34
Navigation aids, YG ring.....	Oct.....	37
Navigation, chart room, Norfolk.....	Aug.....	12
Navy's Air War, history published Nov.....	13	
Neptune, P2V.....	Feb.....	29
Neptune sets distance record.....	Nov.....	13
NQ-1, primary trainer.....	Nov.....	10

O

Office of Research and Inventions.....	May.....	1
Oil consumption, dust filters.....	Oct.....	37
Operation Frostbite.....	Oct.....	26
Operation Nanook.....	Sept.....	23
Operation Nanook used PBM's.....	Nov.....	16
Operation Pinwheel.....	Sept.....	15
Operational training.....	Oct.....	1
Ordnance activity transferred.....	June.....	17
Ordnance, machine guns.....	July.....	16
Ordnance, rocket loading panel.....	Sept.....	30
Ordnance, V-2 rocket research.....	Oct.....	22
Osborn, Lt. Cdr. R. C.....	Feb.....	24
Overhaul wants engines intact.....	Jan.....	32
Oxygen mask tester.....	Oct.....	29
Oxygen tests, high altitude.....	Sept.....	26

P

Parachutes, German ribbon-type.....	Apr.....	13
Parachute hoist promotes order.....	Jan.....	43
Patrol aircraft, P4M.....	Dec.....	10
Patrol aircraft, P2V's ordered.....	Dec.....	11
Patrol aircraft, PV2.....	Feb.....	29
Patrol plane, Jap Emily.....	Oct.....	24
Patrol squadron in Pacific.....	Oct.....	10
Patrol squadrons designated VP.....	Aug.....	12

SUBJECT ISSUE PAGE

Patrol training at Whiting Field.....	Dec.....	18
Pavement of landing mats.....	Oct.....	29
PBM squadrons at Bikini.....	Nov.....	31
PBM's on Arctic reconnaissance.....	Nov.....	16
PBY squadrons in Atlantic.....	June.....	26
PB2Y's scrapped.....	Sept.....	9
PBY-5A brake unit pressurized.....	Jan.....	32
P4M.....	Dec.....	10
Photo flash bulbs.....	Sept.....	35
Photo interpreter school.....	June.....	18
Photographic ports in TBM.....	Sept.....	28
Photography, atom bomb.....	July.....	12
Photography, atom bomb.....	Sept.....	12
Photography, carrier.....	Nov.....	1
Photography, Fighting Lady.....	Apr.....	12
Photography goes to DCNO (Air).....	Feb.....	23
Photography, movie camera school.....	Oct.....	20
Physical fitness, pilots.....	Sept.....	19
Pilotless aircraft.....	Jan.....	19
Pilotless aircraft unit technicians.....	July.....	17
Pilots learn maintenance.....	Sept.....	27
Pilots needed for communications.....	Oct.....	10
Pilots, physical fitness.....	Sept.....	19
Pilots swelling Air Reserve.....	May.....	26
Pilots trained for high speed planes.....	Sept.....	35
Pinwheel, operation turns carriers.....	Sept.....	15
Plane captains' safety school.....	Sept.....	11
Planes, new Navy models.....	Apr.....	20
Planes sank most U.S. ships.....	Mar.....	17
Plexiglas panel protection.....	Nov.....	30
Postwar changes, aviation.....	Aug.....	16
Postwar stations are changed.....	Mar.....	16
Power has punch.....	Jan.....	31
Power loss, control linkage.....	Sept.....	36
Preservation compound for engines.....	Nov.....	28
Preservation, electric hygrometer.....	Oct.....	31
Preservation, engines in storage.....	Aug.....	32
Preservation of aircraft.....	Sept.....	32
Primary flight instructors school.....	Jan.....	17
Project Polly lulls Japs.....	Feb.....	33
Propeller cycloid.....	Nov.....	20
Propeller governor mock-up.....	Jan.....	32
Psychological warfare flights.....	Feb.....	33
P2V aircraft orders increased.....	Dec.....	11
P2V, Neptune.....	Feb.....	29
P2V sets distance record.....	Nov.....	13
Pump discharge tube misaligned.....	Nov.....	30
Pylon fairings, F4U.....	Sept.....	28

Q

Quantico A&R ends operations.....	Apr.....	27
Quonset hut CASU 36.....	June.....	37

R

Radar affects photo flash bulbs.....	Sept.....	35
Radar at Ward.....	June.....	22
Radar gear, squadron use.....	Sept.....	28
Radar jamming.....	Mar.....	18
Radar learns to fly.....	Apr.....	1
Radar, new type airborne.....	Sept.....	26
Radar spots storms.....	Nov.....	17
Radar test hangar at Patuxent.....	Sept.....	36
Radar trainer aids VF(N) pilot.....	Jan.....	42
Radar training at M.I.T.....	Sept.....	20
Radar training school.....	June.....	1
Radio crystals produced at NAS.....	July.....	29
Radio driven target boats undergo tests.....	May.....	33
Randolph honors crew birthdays.....	Nov.....	17
Ranger decommissioned.....	Dec.....	22
Rescue equipment exhibit.....	Sept.....	10
Rescue of Jap seamen.....	Sept.....	9
Rescue signals.....	July.....	24
Rescue work at Crossroads.....	Sept.....	18
Rescue work surveyed.....	Oct.....	21
Research and Inventions, Office of.....	May.....	1
Reserve activities.....	Sept.....	8
Reserve commendation ribbon.....	Sept.....	10
Reserve pilots.....	May.....	26



INDEX 1946

JAN. TO DEC. INCLUSIVE

SUBJECT ISSUE PAGE

Reserve planes get new colors.....	July.....	16
Reserve program.....	Nov.....	8
Reserve program.....	Dec.....	16
Reserve program, NATS and Marines.....	Oct.....	8
Reserve training, air.....	Mar.....	15
Reserve training, pilots.....	Aug.....	11
Reserve training program.....	Apr.....	23
Reserve units vie for award.....	Mar.....	13
Reverse relay, mock-up.....	Sept.....	30
Rivet hole marking is speeded.....	Jan.....	32
Robot weather reporter.....	July.....	22
Rocket firing plot board.....	Nov.....	27
Rockets, German V-2.....	July.....	18
Rockets, V-2 experiments.....	Oct.....	22
Rudder control rod, PBM-5.....	Oct.....	36
Rudder control unit cover.....	Jan.....	42
RUDM forms revised.....	Feb.....	27

S

Safety award, Basic Training Command.....	Oct.....	9
Safety instruction for plane captains.....	Sept.....	11
Safety record, VF-43.....	Sept.....	10
Saidor at Panama Canal.....	July.....	11
Saidor carries helicopters.....	Sept.....	24
Saidor fights maggots.....	Aug.....	12
Saidor, photography laboratory.....	Nov.....	4
Salvage of planes at NAS Alameda.....	Aug.....	37
Salvage of planes at NAS Clinton.....	Sept.....	32
Salvage of planes at NAS Norfolk.....	Nov.....	35
Salvage of surveyed planes.....	Apr.....	30
Seadrome, British.....	Jan.....	17
Seaplane, utility, JL-1.....	Nov.....	10
Seaplanes, beaching.....	Oct.....	27
Seaplane tender on Arctic cruise.....	Sept.....	23
Search and rescue, new name.....	Oct.....	10
Search and rescue survey.....	Oct.....	21
Search operations, old wreckage.....	Sept.....	36
Seat, comfortable for pilot.....	June.....	18
Seat, pilot ejection.....	Dec.....	1
Securing planes in hurricanes.....	Sept.....	31
Service Squadron Six.....	Mar.....	25
Shakedown for boots at San Diego.....	Oct.....	16
Ship losses, U.S.....	Mar.....	17
Signals, rescue.....	July.....	24
Skyraider, Douglas AD-1.....	Oct.....	17
SNJ's converted for carrier use.....	Nov.....	35
Solar stills.....	May.....	32
Sono-buoy switches waterproofed.....	Sept.....	29
Spark plug conveyor.....	Feb.....	26
Spark plug cleaning.....	Apr.....	34
Spark plug cleaning.....	Sept.....	28
Special Devices.....	May.....	6
Special Devices allowance lists.....	Nov.....	16



Special Devices moved to Long Island.....	Sept.....	10
Spraying with DDT.....	July.....	20
Squadron designations are set.....	Feb.....	23
Squadrons, types of.....	Mar.....	24
St. Simons Radar Training School.....	June.....	1
Stud removal on R-2800 engines.....	Jan.....	37
Submarines, enemy, sunk by Navy planes.....	Sept.....	9
Submarine hangars, Japanese.....	Mar.....	11
Suggestion program to continue.....	Jan.....	18
Supercharger, Turbo.....	June.....	34
Survival, ditching technique.....	Sept.....	11
Survival equipment exhibit.....	Sept.....	10
Survival equipment in liferafts reduced.....	Nov.....	34
Survival rescue signals.....	July.....	24
Survival, rescue work surveyed.....	Oct.....	21
Survival, solar stills.....	May.....	32
Survival, training at Crossroads.....	Sept.....	18
Sweepback wing plane.....	July.....	16

SUBJECT T ISSUE PAGE

Target teaches glide angles.....	July.....	33
Target towing attachment.....	Oct.....	27
Target towing, JD-1.....	June.....	14
Targets, slick marker bombs.....	Sept.....	28
Task Force practices en route.....	Mar.....	17
Task Unit 77.4.3 gets citation.....	July.....	17
Telemetering, flight testing.....	June.....	11
Television cameras on JM-1.....	June.....	16
Tender Becomes Troop Ship.....	Mar.....	23
Test pilots school, British.....	Sept.....	25
Testing unit, instruments.....	Sept.....	37
Throttle adjusting tool.....	Nov.....	29
Thunderstorm Research.....	Mar.....	12



Towing Disabled planes.....	June.....	16
Trainer aircraft, NQ-1.....	Nov.....	10
Training, air advanced.....	Oct.....	1
Training, Aerographer's Mates.....	Sept.....	17
Training, Air, Academy grads at Jax.....	Nov.....	9
Training, Aviation Bos'n's Mate.....	Nov.....	24
Training, Basic Air.....	Aug.....	1
Training, Central Examining Board.....	Jan.....	22
Training Devices, Nazi.....	Apr.....	10
Training, electronics officers.....	Sept.....	20
Training in A&R by Visual Aids.....	Mar.....	33
Training, Link operators.....	Sept.....	25
Training, Movie Camera School.....	Oct.....	20
Training, patrol, at Whiting Field.....	Dec.....	18
Training program for CAG-4.....	Oct.....	16
Training Program in VP-124.....	Nov.....	15
Training schools form league.....	Apr.....	16
Training, test pilots.....	Sept.....	25
Transport plane, Constitution.....	Oct.....	11
Truk, first U.S. plane landing.....	Sept.....	11
Turbo-jet engines.....	Aug.....	9
Turbo-supercharger.....	June.....	34
Turtle sets distance record.....	Nov.....	13
Typhoon film available.....	Aug.....	13
Typhoon reconnaissance.....	Apr.....	16
Typhoon reconnaissance.....	Nov.....	22

U

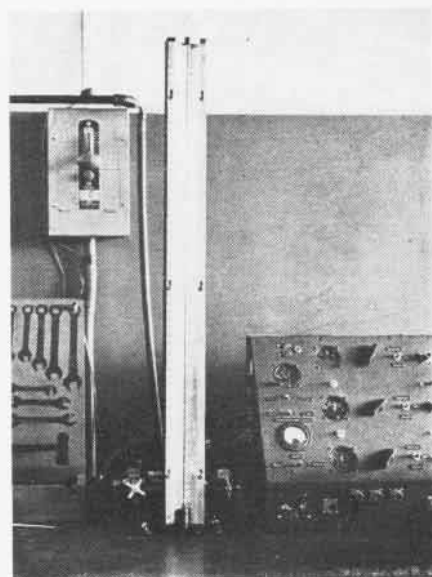
U.S.S. Essex.....	Feb.....	20
USN Aviators Return to College.....	June.....	18
USN Officers Return to College.....	Aug.....	10

V

Vegetable Run to Iwo Jima.....	July.....	34
V-2 Bomb Explodes Upper Air.....	July.....	18
VF's Get Airspeed Indicator.....	Feb.....	27
Vought Fighter, XF5U.....	Aug.....	13
VPB Begins Post-War Program.....	June.....	18
VPB-73, Atlantic Patrol.....	June.....	26
VPB-73 Gets Survival Training.....	Mar.....	14
VR-4 Creates MARU for R5D's.....	Jan.....	43
VRF squadron changes.....	Aug.....	14

W

Ward Island's Training.....	June.....	22
Wasp, Inactivation process.....	July.....	1
Water Breakers, Overhaul of.....	Feb.....	28
Water in cylinders.....	Sept.....	36
Waves join reserves.....	Apr.....	23
Wave recruits needed.....	Sept.....	23
Waves in Aviation.....	Oct.....	13
Weather information by radar.....	Nov.....	17
Weather Models.....	Oct.....	18
Weather Planes to Stalk Storms.....	June.....	16
Weather planes track typhoons.....	Nov.....	22
Weather Station, Automatic.....	July.....	22
Weathermen trained.....	Sept.....	17
Weight & Balance Principles Taught.....	Nov.....	28
Weight & Balance Regulations.....	Jan.....	6
Wheel maintenance.....	Sept.....	36
Whiting Field, advanced training.....	Dec.....	18
Wing folding device hydraulic leaks.....	Nov.....	27
Women's Reserve, aviation.....	Oct.....	13
Workstand, PBM rudder.....	Sept.....	37



CASU Builds Instrument Testers

CASU 6—To simplify testing procedures this unit has built a test panel and water manometer that eliminate the chances of improperly connecting sensitive instruments.

The water manometer is calibrated in knots on one side and miles per hour on the other side facilitating its use on both types of airspeed indicators. The direct-reading scale enables the operator to see at a glance what the proper reading is without the necessity of mathematically converting it.

A compressor furnishes pressure at about two pounds per square inch through a standard type air filter. A three-way connection from the filter leads to the instrument under test, the manometer, and to a bleed valve.

The panel checks airspeed indicators, altimeters, and manifold pressure gauges through a connection to a "vacuum-pressure" pump.

A hand-operated, dead-weight tester, obtained from a standard C-1 Test Set and mounted behind the panel, is used to check the readings on oil and fuel pressure gauges.

A vacuum pump tests air driven gyros. A clock mounted in the panel tells when the gyro reaches its maximum rpm., and shows the amount of time it takes for the horizon bar to settle to a normal position.

► **BuAer Comment**—This is typical of many possible arrangements of testing equipment designed to fit the requirements of a particular maintenance or overhaul facility. Standard items of test equipment are available as listed in applicable allowance lists, but jury-rigged test set-ups would seem to have some value for special application and in some cases prove more practical than standard test equipment now available for use to meet this test problem.

LETTERS

Sirs:

In reading NANEWS I note that interest is often shown in "firsts." Therefore I think you'll be interested in the following firsts claimed by VB-101, most occurring during the year 1943, and as far as is known, never before recorded as such:

(a) First four-engine landplane to land on the new field constructed at Midway, and before completion.

(b) The first and only Navy four-engine landplane squadron which participated, as a joint attack group with AAF and Marine Corps aircraft as fighter escort. If not the only squadron so participating, it was the first.

(c) The first Navy four-engine landplane squadron to participate in daytime squadron formation bombing against the enemy and, I believe the only one.

(d) I cannot yet prove it, for lack of photographs, but VB-101 claims to be the first and only Navy four-engine landplane squadron which sank an enemy vessel in daytime squadron formation bombing. Unfortunately, one of the two planes destroyed on this attack was the plane completely equipped photographically. This assessment is still under consideration. Official credit was only given for 3-1000 hits.

(e) The first and I believe, only, Navy four-engine landplane squadron which qualified all its pilots in night flying, without prior training, during combat, in the form of attacks against well defended enemy air bases and ships.

(f) The first and only squadron which flew together in a squadron formation for the first time in action against the enemy.

(g) The first Navy four-engine landplane squadron to have been under the operational control of a Commander Aircraft, Solomon Islands, from each of the three services—Marine Corps, Army and Navy.

W. A. MOFFETT,
CAPTAIN, USN



Sirs:

This station's proposed insignie is submitted in view of the tremendous demand for unique naval service insignia, and in the hope that this contribution still has the merit of originality. By copy of this correspondence the Chief of the Bureau of Aeronautics is requested to approve the design.

COMMANDING OFFICER
W. M. WALSH

NAS TRINIDAD

¶ NANEWS thanks NAS TRINIDAD for sending it a copy of the station's proposed insignie. Squadrons and stations submit their proposals in accordance with Article 21-102 BuAer Manual.

Sirs:

It is noted in the September issue of the NAVAL AVIATION NEWS that VF-43 is quite proud of the record established by its pilots consisting of one major accident during 2300 hours of peacetime flying from the deck of a CV. This is a very good record BUT here is a real record for them to "shoot at."

Composite Squadron 96, operating from the pitching, "postage-stamp" decks of the two jeep carriers, the *Rudyard Bay* and the *Shamrock Bay*, during the Okinawa campaign, accumulated a total of 917 successive landings without even a minor accident. This represented about 3668 hours of combat operation in FM2's and TBM's under some very adverse conditions.

This splendid record is attributed to the skill and high morale of the pilots. They had a remarkable zest for competition and were eager to surpass any goal which appeared as a challenge to their skill and alertness. Such a challenge appeared in NAVAL AVIATION NEWS when a squadron boasted of having made about 470 successive landings aboard a CV without an accident. One thousand was our goal and we almost made it.

J. A. OWENS, LT. CDR.

Instructors' School
NAS CORPUS CHRISTI

Sirs:

In case some of the groups in this command do not answer your query concerning the maintenance and operations of VR 5 and Air Group 4, I would like to inform you that in Air Groups 17, 18, 20, and 82 pilots not only cleaned their planes but also formed check crews, engine change crews and performed every sort of maintenance and service on their planes including acceptance and transfer checks as well as routine checks. They really got their fingers greasy.

As more and more enlisted personnel are reporting, these duties are being returned to the enlisted men. The experience and training that pilots received during this period was invaluable.

By the way, Air Group 4 was also trained under COMFAIR QUONSET.

CDR. W. J. WIDHELM
COMFAIR (PROG & PLAN)
NAS QUONSET POINT

Editor's Note

By omission, answers to last month's *Recognition Quiz* (inside back cover) were not printed. So that readers can double check themselves, here are the answers that should have appeared on this page in the October issue:

1. Vampire (Br.) 2. Meteor (Br.) 3. P-80 4. Sea Fury (Br.) 5. P2V Neptune 6. PE-8 (Russian) (Formerly TB-7)



The Cover Those are not pygmies under the wing of the new *Constitution*, the Navy's Lockheed transport, but full-sized persons. This giant is 20 tons heavier than *Mars* but flies twice as fast. Made first flight Nov. 9.

CONTENTS

High Speed Flight . . .	1
NAMC Shows Progress . . .	7
Grampaw Pettibone . . .	8
New XP4M Uses Jets . . .	10
Did You Know . . .	10
Inyokern Transports Milk . . .	12
Carriers Cruise off Europe . . .	14
Afloat and Ashore . . .	15
Reserve Units . . .	16
Sky Sentries . . .	18
Ranger's Tour is Ended . . .	22
Flight Safety . . .	23
Cockpits Tailored to Fit . . .	24
Truculent Turtle Log . . .	26
Public Views 'Bat' . . .	26
High Intensity Lighting . . .	27
Index . . .	37
Letters . . .	40

Navigation Quiz 10, Supply News 30, Aviation Ordnance 31, Naval Aeronautic Publications Index 32, The Howler 34.

ANSWERS TO QUIZZES

1 RECOGNITION QUIZ (Inside back cover)

1. U.S.S. Indianapolis 2. Illustrious CV (Br.) 3. Fiji class CL (Br.) 4. Archangel (ex-Royal Sovereign) BB (Russian) 5. Commencement Bay class CVE 6. Fargo class CL.

2 AIR STATION QUIZ (Inside front cover)

Top—NAS Atlanta Ga. Bottom—NAS San Diego

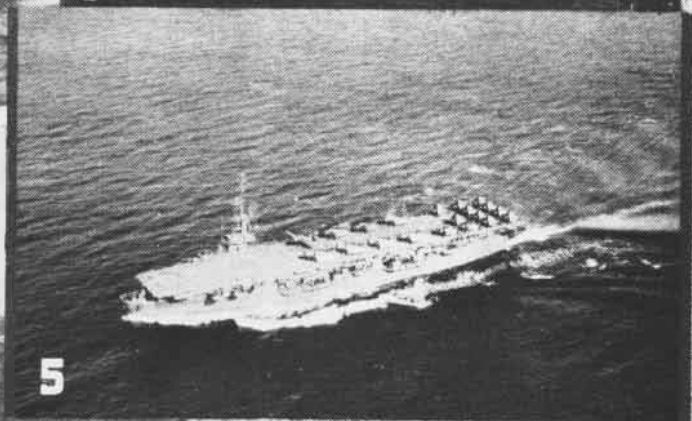
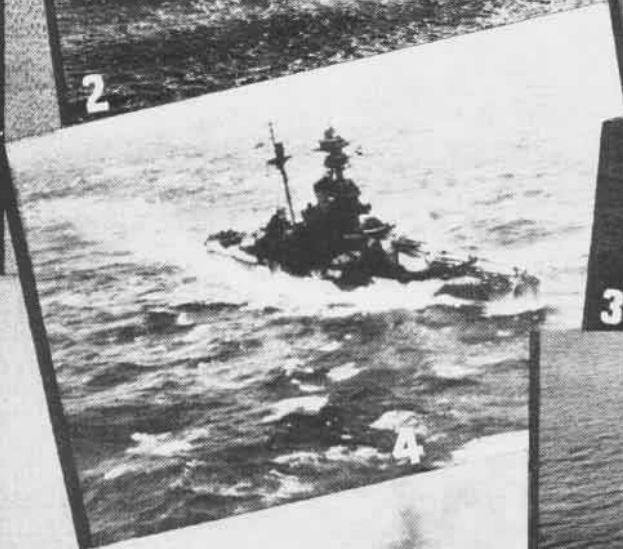
3 NAVIGATION QUIZ (p. 10)

- 1.—(a) 004°, (b) 176°
- 2.—(a) 148K, (b) 181K
- 3.—(a) 2012 GCT., (b) Lat. 27° 19' N, Long. 157° 35' W.



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STRIKING POWER



NAVAL AVIATION

NEWS

RECOGNITION QUIZ

ANSWERS ON PAGE 40



SQUADRON INSIGNIA

THIS month's selections of squadron insignia includes three ingenious designs. VC-69 used a wolf with goggles to portray the searching and striking activities which comprised its mission of anti-submarine patrol with CVE's in the Atlantic. Marine Fighter Squadron 123 used Dilbert and a black eight-ball as its motif because it seemed to be entrenched behind the ball because of a series of disappointments and because Dilbert was a constant reminder of what a good fighter pilot is not. Equally ingenious is the .45 cal. pistol used by VF-45 with a pair of boxing gloves on its insigne.



VB-5



VMF-123



VF-45



VC-69